

***Grizzly***  
***Industrial, Inc.***®

**MODEL G4814**  
**INDUSTRIAL HOLLOW CHISEL**  
**MORTISING MACHINE**  
**OWNER'S MANUAL**



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**WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE  
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#TS1185 PRINTED IN TAIWAN



## **WARNING!**

**This manual provides critical safety instructions on the proper setup, operation, maintenance and service of this machine/equipment.**

**Failure to read, understand and follow the instructions given in this manual may result in serious personal injury, including amputation, electrocution or death.**

**The owner of this machine/equipment is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, blade/cutter integrity, and the usage of personal protective equipment.**

**The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.**



## **WARNING!**

**Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:**

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

**Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.**

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# INTRODUCTION

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## Manual Accuracy

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We are proud to offer this manual with your new machine! We've made every effort to be exact with the instructions, specifications, drawings, and photographs of the machine we used when writing this manual. However, sometimes errors do happen and we apologize for them.

Also, owing to our policy of continuous improvement, **your machine may not exactly match the manual.** If you find this to be the case, and the difference between the manual and machine leaves you in doubt, immediately call our technical support for updates or clarification.

For your convenience, we always keep current Grizzly manuals and most updates available on our website at [www.grizzly.com](http://www.grizzly.com). Any updates to your machine will be reflected in these documents as soon as they are complete. Visit our site often to check for the latest updates!

## Contact Info

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We stand behind our machines. If you have any service questions, parts requests or general questions about the machine, please call or write us at the location listed below.

Grizzly Industrial, Inc.  
1203 Lycoming Mall Circle  
Muncy, PA 17756  
Phone: (570) 546-9663  
Fax: (800) 438-5901  
E-Mail: [techsupport@grizzly.com](mailto:techsupport@grizzly.com)

If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.  
c/o Technical Documentation Manager  
P.O. Box 2069  
Bellingham, WA 98227-2069  
Email: [manuals@grizzly.com](mailto:manuals@grizzly.com)

## Functional Overview

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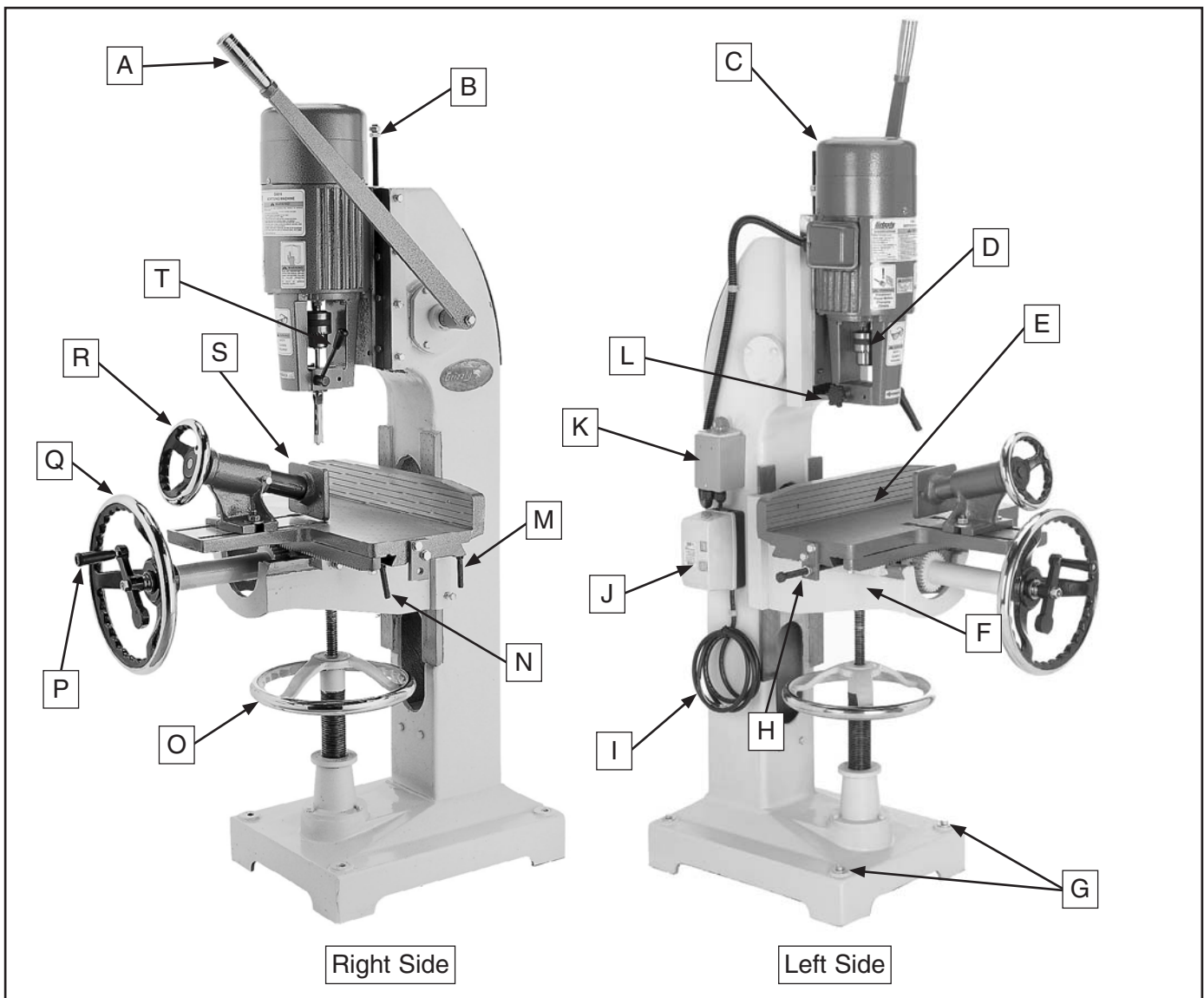
A mortise and tenon joint is one of the strongest joints in woodworking, but the difficult task is to cut an accurate mortise by hand. A mortising machine is designed to make a mortise with consistent and accurate efficiency.

The workpiece is marked for the dimensions of the mortise and the depth stop is set for the correct depth. The workpiece is then clamped to the table and against the fence with the vise clamp and correctly positioned below the mortising chisel and bit. The mortise auger bit fits inside a square hollow chisel and, when the machine is on, is brought down into the workpiece to begin the mortise hole. The hollow chisel reaches the wood slightly behind the bit and squares the sides of the hole. The flutes of the auger bit carry the chips up through the center of the chisel and expels them through the chisel's side chip port.

Repeating the mortising operation in a straight line makes the mortise. This is accomplished by moving the table along the longitudinal or cross paths with the use of the handwheel controls.



# Identification



**Figure 1.** Model G4814 identification.

- |  |   |
|--|---|
| <b>A.</b> Operating Handle                         | <b>K.</b> Speed Switch                    |
| <b>B.</b> Depth Stop                               | <b>L.</b> Chisel Sleeve Lock Knob         |
| <b>C.</b> Motor                                    | <b>M.</b> Knee Lock                       |
| <b>D.</b> Chuck                                    | <b>N.</b> Table Lock                      |
| <b>E.</b> Table w/Fence                            | <b>O.</b> Vertical (Z-Axis) Handwheel     |
| <b>F.</b> Knee                                     | <b>P.</b> Cross Slide (Y-Axis) Handwheel  |
| <b>G.</b> Floor Mounting Locations (2 of 4)        | <b>Q.</b> Longitudinal (X-Axis) Handwheel |
| <b>H.</b> Longitudinal Table Stop Bracket (1 of 2) | <b>R.</b> Vise Handwheel                  |
| <b>I.</b> Power Cord                               | <b>S.</b> Vise Clamp                      |
| <b>J.</b> Power ON/OFF Switch                      | <b>T.</b> Chisel Sleeve Lock Lever        |





# MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

## MODEL G4814 INDUSTRIAL HOLLOW CHISEL MORTISING MACHINE

### Product Dimensions:

Weight..... 530 lbs.  
 Length/Width/Height..... 35 x 23 x 65 in.  
 Foot Print (Length/Width)..... 21-1/2 x 15-1/2 in.

### Shipping Dimensions:

Type..... Wood Slat Crate  
 Content..... Machine  
 Weight..... 546 lbs.  
 Length/Width/Height..... 36 x 25 x 66 in.

### Electrical:

Switch..... Magnetic Safety Switch  
 Switch Voltage..... 220V  
 Cord Length..... 8 ft.  
 Cord Gauge..... 12 gauge  
 Minimum Circuit Size..... 15 amp  
 Plug Included..... No  
 Phase Converter..... G5841

### Motors:

#### Main

Type..... TEFC Capacitor Start Induction  
 Horsepower..... 2 HP  
 Voltage..... 220V  
 Prewired..... 220V  
 Phase..... Three  
 Amps..... 12A  
 Speed..... 1725/3450 RPM  
 Cycle..... 60 Hz  
 Number Of Speeds..... 2  
 Power Transfer ..... Direct Drive  
 Bearings..... Shielded and Permanently Lubricated

### Main Specifications:

#### Operation

Table Tilt..... Right and Left 30 deg.  
 Table Cross Travel..... 5 in.  
 Table Longitudinal Travel..... 18 in.  
 Table Vertical Travel..... 12 in.  
 Spindle Taper..... JT#6  
 No Of Spindle Speeds..... 2  
 Range Of Spindle Speeds..... 1725, 3450 RPM



**Cutting Capacities**

Maximum Stock Width.....	12 in.
Maximum Stock Thickness.....	4 in.
Maximum Mortising Depth.....	4 in.
Maximum Chisel Travel.....	4-13/16 in.
Maximum Dist Column To Chisel.....	7-3/4 in.
Chisel Size Range.....	1/4 - 1-1/8 in.

**Table Information**

Table Size Length.....	16-3/4 in.
Table Size Width.....	21-1/4 in.
Table Size Thickness.....	1-3/4 in.
Floor To Table Height.....	19 - 35-1/2 in.

**Chuck Information**

Chuck Type.....	Keyed
Chuck Size.....	1/2 in.
Chuck Capacity.....	1/2 in.

**Construction**

Base.....	Cast Iron
Head.....	Cast Iron
Table.....	Cast Iron
Paint.....	Epoxy

**Other**

Handle Length.....	27 in.
Clamp Drive.....	Manual
Head Drive.....	Manual

**Other Specifications:**

Country Of Origin .....	Taiwan
Warranty .....	1 Year
Serial Number Location .....	Machine Label on Motor Cover

**Features:**

- 2HP, 2 Speed Motor
- Includes 5/8" and 3/4" Chisel Sleeves
- Includes Three Mortising Chisels in Sizes 1/4", 3/8", and 1/2"
- Universal Compound Table
- Hand Operated Table Clamp Holds Stock Firmly in Position



# SECTION 1: SAFETY

## WARNING

### For Your Own Safety, Read Instruction Manual Before Operating this Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures.



Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTICE**

This symbol is used to alert the user to useful information about proper operation of the machine.

## WARNING

### Safety Instructions for Machinery

- 1. READ THE ENTIRE MANUAL BEFORE STARTING MACHINERY.** Machinery presents serious injury hazards to untrained users.
- 2. ALWAYS USE ANSI APPROVED SAFETY GLASSES WHEN OPERATING MACHINERY.** Everyday eyeglasses only have impact resistant lenses—they are NOT safety glasses.
- 3. ALWAYS WEAR A NIOSH APPROVED RESPIRATOR WHEN OPERATING MACHINERY THAT PRODUCES DUST.** Most types of dust (wood, metal, etc.) can cause severe respiratory illnesses.
- 4. ALWAYS USE HEARING PROTECTION WHEN OPERATING MACHINERY.** Machinery noise can cause permanent hearing loss.
- 5. WEAR PROPER APPAREL. DO NOT** wear loose clothing, gloves, neckties, rings, or jewelry that can catch in moving parts. Wear protective hair covering to contain long hair and wear non-slip footwear.
- 6. NEVER OPERATE MACHINERY WHEN TIRED OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL.** Be mentally alert at all times when running machinery.





# WARNING

## Safety Instructions for Machinery

7. **ONLY ALLOW TRAINED AND PROPERLY SUPERVISED PERSONNEL TO OPERATE MACHINERY.** Make sure operation instructions are safe and clearly understood.
8. **KEEP CHILDREN AND VISITORS AWAY.** Keep all children and visitors a safe distance from the work area.
9. **MAKE WORKSHOP CHILDPROOF.** Use padlocks, master switches, and remove start switch keys.
10. **NEVER LEAVE WHEN MACHINE IS RUNNING.** Turn power **OFF** and allow all moving parts to come to a complete stop before leaving machine unattended.
11. **DO NOT USE IN DANGEROUS ENVIRONMENTS.** DO NOT use machinery in damp, wet locations, or where any flammable or noxious fumes may exist.
12. **KEEP WORK AREA CLEAN AND WELL LIGHTED.** Clutter and dark shadows may cause accidents.
13. **USE A GROUNDED EXTENSION CORD RATED FOR THE MACHINE AMPERAGE.** Grounded cords minimize shock hazards. Undersized cords create excessive heat. Always replace damaged extension cords.
14. **ALWAYS DISCONNECT FROM POWER SOURCE BEFORE SERVICING MACHINERY.** Make sure switch is in OFF position before reconnecting.
15. **MAINTAIN MACHINERY WITH CARE.** Keep blades sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
16. **MAKE SURE GUARDS ARE IN PLACE AND WORK CORRECTLY BEFORE USING MACHINERY.**
17. **REMOVE ADJUSTING KEYS AND WRENCHES.** Make a habit of checking for keys and adjusting wrenches before turning machinery **ON**.
18. **CHECK FOR DAMAGED PARTS BEFORE USING MACHINERY.** Check for binding or misaligned parts, broken parts, loose bolts, and any other conditions that may impair machine operation. Repair or replace damaged parts before operation.
19. **USE RECOMMENDED ACCESSORIES.** Refer to the instruction manual for recommended accessories. Improper accessories increase risk of injury.
20. **DO NOT FORCE MACHINERY.** Work at the speed for which the machine or accessory was designed.
21. **SECURE WORKPIECE.** Use clamps or a vise to hold the workpiece when practical. A secured workpiece protects your hands and frees both hands to operate the machine.
22. **DO NOT OVERREACH.** Maintain stability and balance at all times.
23. **MANY MACHINES CAN EJECT WORKPIECES TOWARD OPERATOR.** Know and avoid conditions that cause the workpiece to "kickback."
24. **ALWAYS LOCK MOBILE BASES (IF USED) BEFORE OPERATING MACHINERY.**
25. **CERTAIN DUST MAY BE HAZARDOUS** to the respiratory systems of people and animals, especially fine dust. Be aware of the type of dust you are exposed to and always wear a respirator designed to filter that type of dust.



## **WARNING**

# **Additional Safety Instructions for Mortising Machines**

- 1. HAND PROTECTION.** Mortising chisels and bits are sharp and can quickly pierce your hand. Always wear heavy leather gloves when handling these items. The chisels and bits may become very hot during operation. Always allow the chisels and bits to cool before handling them.
- 2. AVOIDING ENTANGLEMENT.** DO NOT wear loose clothing, gloves, or jewelry when the machine is **ON**. Tie back long hair and roll up sleeves. Never place any part of your body near or under the mortising chisel and bit when the machine is **ON**.
- 3. CLEARING DEBRIS.** Chips and dust build-up can prevent good results and present an injury hazard. Turn the machine **OFF**, allow the chisel and bit to cool, then clear away the chips and dust with a vacuum. Make sure the chip port of the chisel is facing to the left or right—not directly at the operator—and is not blocked or clogged.
- 4. MOUNTING WORKPIECES.** Workpieces that move during operation can bind the chisel and bit and can result in personal injury or machine damage. Always secure the workpiece against the table fence with the vise and, if necessary, other clamping devices.
- 5. USING CORRECT MATERIALS.** Mortising materials other than natural wood fiber can result in serious personal injury and machine damage. Never use this machine for anything except mortising in wood.
- 6. CHISELS AND BITS.** Chisels or bits that come loose from the machine during operation can cause serious personal injury. Always make sure the chisels and bits are properly installed and that they are not worn or damaged.
- 7. CHUCK KEY & TOOLS.** To avoid injury from a tool thrown from the machine during operation, always remove chuck key and tools from the machine before turning it **ON**.
- 8. OPERATING SPEED.** Always operate this machine at the appropriate speed for the chisel and bit size you are using and the material that you are mortising.
- 9. FACE PROTECTION AND RESPIRATOR.** Wood chips and dust created from mortising can become a hazard to the face or lungs. Always wear safety glasses/face shield and a respirator while operating the machine.
- 10. ADJUSTMENTS, MAINTENANCE, OR SERVICE.** To avoid inadvertently machine startups or electrocution, always disconnect the machine from power before performing adjustments, maintenance, or service.
- 11. EXPERIENCING DIFFICULTIES.** If at any time you are experiencing difficulties performing the intended operation, stop using the machine! Contact our Technical Support at (570) 546-9663.

## **WARNING**

**Like all machinery there is potential danger when operating this machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to decrease the risk of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.**



# SECTION 2: CIRCUIT REQUIREMENTS

## 220V 3-Phase Operation

### **!WARNING**

Serious personal injury could occur if you connect the machine to power before completing the setup process. **DO NOT** connect the machine to the power until instructed later in this manual.



### **!WARNING**

Electrocution or fire could result if machine is not grounded and installed in compliance with electrical codes. Compliance **MUST** be verified by a qualified electrician!

### Full Load Amperage Draw

Amp Draw..... 12 Amps

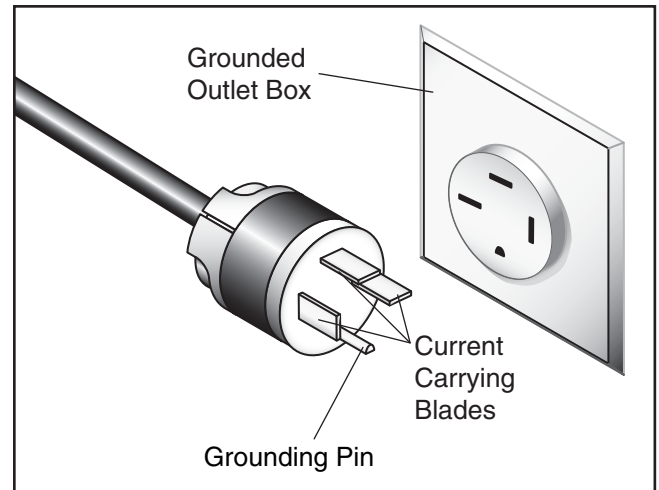
### Power Supply Circuit Requirements

You **MUST** connect your machine to a grounded circuit that is rated for the amperage given below. Never replace a circuit breaker on an existing circuit with one of higher amperage without consulting a qualified electrician to ensure compliance with wiring codes. **If you are unsure about the wiring codes in your area or you plan to connect your machine to a shared circuit, consult a qualified electrician.**

Minimum Circuit Size..... 15 Amps

### Power Connection Device

The power connection device depends on the type of installed or planned service. We recommend using a NEMA 15-15 plug and receptacle shown in **Figure 2**.



**Figure 2.** NEMA 15-15 plug and receptacle.

### Extension Cords

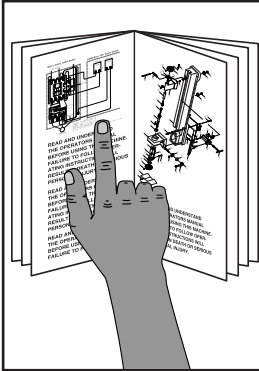
Using extension cords may reduce the life of the motor. Instead, place the machine near a power source. If you must use an extension cord:

- Use at least a 14 gauge, 4-wire cord that does not exceed 50 feet in length.
- Ensure that the extension cord contains a ground wire and plug pin.



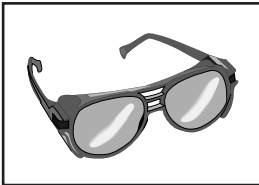
# SECTION 3: SETUP

## Setup Safety



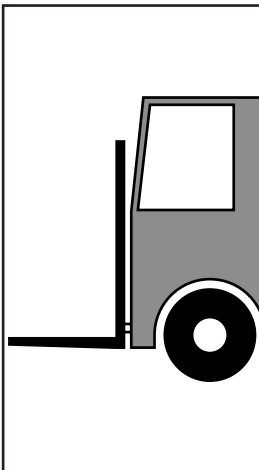
### **!WARNING**

This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!



### **!WARNING**

Wear safety glasses during the entire setup process!



### **!WARNING**

The Model G4814 is a heavy machine. Serious personal injury may occur if safe moving methods are not used. To be safe, get assistance and use power equipment rated for at least 750 lbs. to move the shipping crate and remove the machine from the crate.

### **!CAUTION**

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.

## Items Needed for Setup

The following items are needed to complete the setup process, but are not included with your machine:

Description	Qty
• Power Lifting Equipment (rated for at least 750 lbs.....)	1
• Lifting Strap (rated for at least 750 lbs. used in "choker" configuration).....	1
• Assistant.....	At Least 1
• Safety Glasses .....	1 Per Person
• Level .....	1
• Floor Mounting Hardware & Shims .....	As Needed
• Shop Rags & Cleaning Solvent..	As Needed
• Standard Screwdriver .....	1
• Wrenches 14mm & 19mm .....	1 Each

## Unpacking

Your machine was carefully packaged for safe transportation. Remove the packaging materials from around your machine and inspect it. If you discover the machine is damaged, *please immediately call Customer Service at (570) 546-9663 for advice.*

Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*

When you are completely satisfied with the condition of your shipment, inventory the contents.



# Inventory

The following is a description of the main components shipped with your machine. Lay the components out to inventory them.

**Note:** *If you can't find an item on this list, check the mounting location on the machine or examine the packaging materials carefully. Occasionally we pre-install certain components for shipping purposes.*

Inventory: (Figure 3)	Qty
<b>A.</b> Mortising Chisels and Bits:	
—1/4".....	1
—3/8".....	1
—1/2" (installed).....	1
<b>B.</b> Longitudinal Limit Stops.....	2
<b>C.</b> Mortising Chisel Sleeves:	
—5/8".....	1
—3/4" (installed).....	1
<b>D.</b> Chuck Key.....	1
<b>E.</b> Mortising Bit Chuck 1/2" (installed).....	1

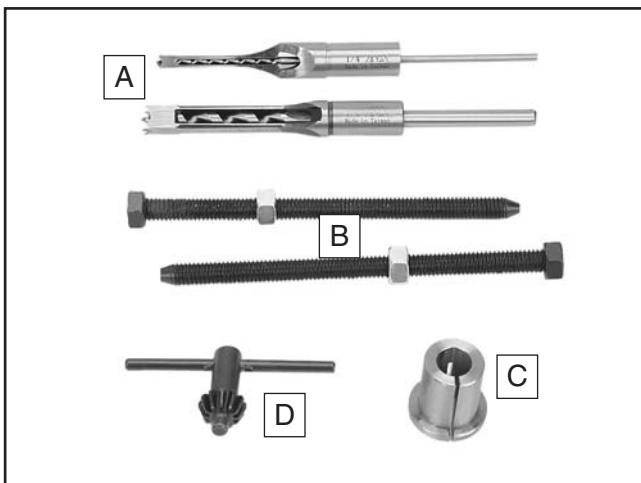



Figure 3. Model G4814 inventory.




**! WARNING**  
**SUFFOCATION HAZARD!**  
 Immediately discard all plastic bags and packing materials to eliminate choking/suffocation hazards for children and animals.

# Clean Up

The unpainted surfaces are coated with a waxy oil to prevent corrosion during shipment. Remove this protective coating with a solvent cleaner or degreaser, such as shown in **Figure 4**. For thorough cleaning, some parts must be removed. **For optimum performance, clean all moving parts or sliding contact surfaces.** Avoid chlorine-based solvents, such as acetone or brake parts cleaner that may damage painted surfaces. Always follow the manufacturer's instructions when using any type of cleaning product.



**! WARNING**  
 Gasoline and petroleum products have low flash points and can explode or cause fire if used to clean machinery. **DO NOT** use these products to clean the machinery.



**! CAUTION**  
 Many cleaning solvents are toxic if inhaled. Minimize your risk by only using these products in a well ventilated area.

**G2544—Solvent Cleaner & Degreaser**  
**H9692—Orange Power Degreaser**  
 Great products for removing shipping grease.

Call  
**1-800-523-4777**  
 To Order



Figure 4. Cleaner/degreasers available from Grizzly.



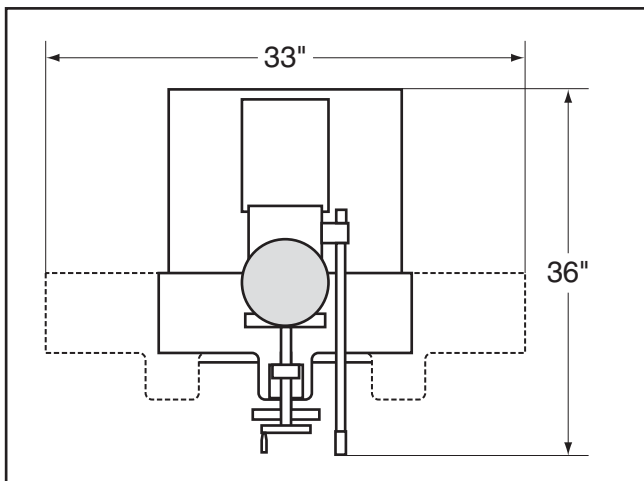
# Site Considerations

## Floor Load

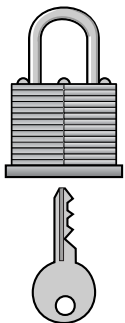
Refer to the **Machine Data Sheet** for the weight and footprint specifications of your machine. Some residential floors may require additional reinforcement to support both the machine and operator.

## Placement Location

Consider existing and anticipated needs, size of material to be processed through each machine, and space for auxiliary stands, work tables or other machinery when establishing a location for your new machine. See **Figure 5** for the minimum working clearances.



**Figure 5.** Minimum working clearances.

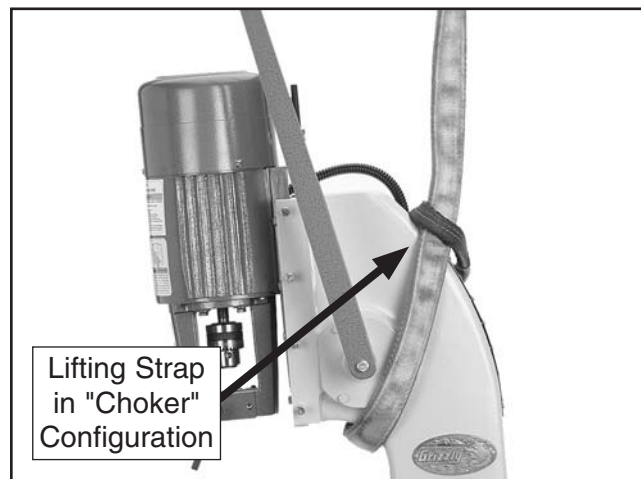
	<p><b>⚠ CAUTION</b></p> <p>Children and visitors may be seriously injured if unsupervised around this machine. Lock entrances to the shop or disable start switch or power connection to prevent unsupervised use.</p>
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# Moving & Placing Machine

	<p><b>⚠ WARNING</b></p> <p>The Model G4814 is a heavy machine. Serious personal injury may occur if safe moving methods are not used. To be safe, get assistance and use power equipment rated for at least 750 lbs. to move the shipping crate and remove the machine from the crate.</p>
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To move the machine to the prepared location:

1. Remove the sides and top of the shipping crate.
2. Wrap one end of the lifting strap around the column, as shown in **Figure 6**, pull the other end through the strap loop in a "choker" configuration, then attach the free end of the strap to the lifting equipment.



**Figure 6.** Lifting strap wrapped around the column in a "choker" configuration.





3. Unbolt the machine from the shipping pallet.
4. With assistance to steady the load and make sure the strap does not slip, raise the machine just enough to clear the shipping pallet and any floor obstacles, then place it in the prepared location.
5. As you mount the machine to the floor, use a level and shims to make sure the table is level.

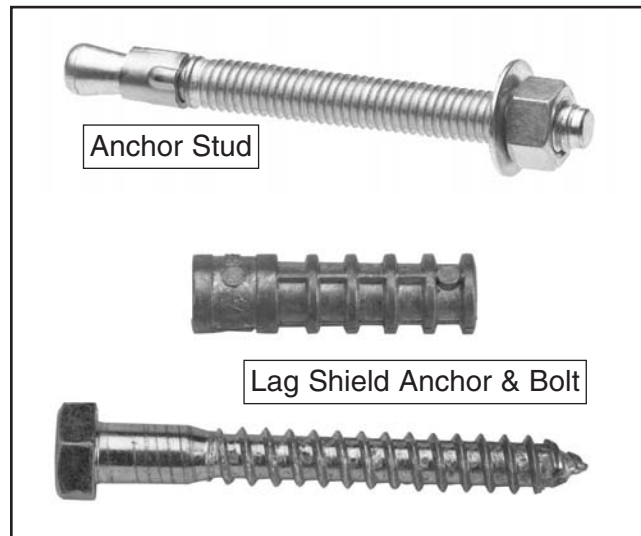
**Note:** Use shims to fill the gaps between the base and the floor at the mounting points to avoid warping or cracking the cast iron.

## Mounting to Floor

Although not required, we recommend that you mount your new machine to the floor. Because this is an optional step and floor materials may vary, floor mounting hardware is not included. Generally, you can either bolt your machine to the floor or mount it on machine mounts. Both options are described below. Whichever option you choose, it is necessary to level your machine with a precision level.

### Bolting to Concrete Floors

Anchor studs and lag shield anchors with lag bolts (**Figure 7**) are two popular methods for anchoring an object to a concrete floor. We suggest you research the many options and methods for mounting your machine and choose the best that fits your specific application.



**Figure 7.** Typical fasteners for mounting to concrete floors.

### Using Machine Mounts

Using machine mounts, shown in **Figure 8**, gives the advantage of fast leveling and vibration reduction. The large size of the foot pads distributes the weight of the machine to reduce strain on the floor.



**Figure 8.** Machine mount example.

## **NOTICE**

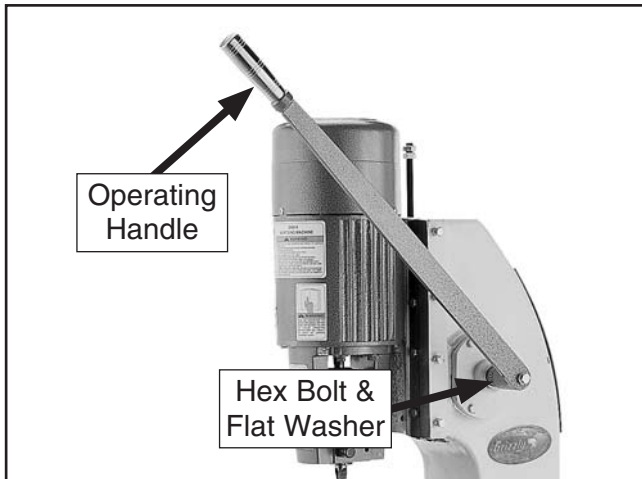
We strongly recommend securing your machine to the floor if it is hardwired to the power source. Consult with your electrician to ensure compliance with local codes.



# Assembly

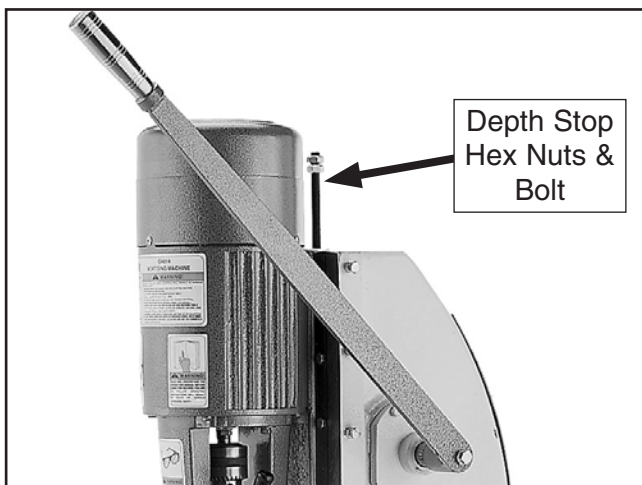
## To assemble your mortising machine:

1. Remove the hex bolt and flat washer securing the operating handle to the pivot axle, then remove the handle (see **Figure 9**).



**Figure 9.** Operating handle correctly installed.

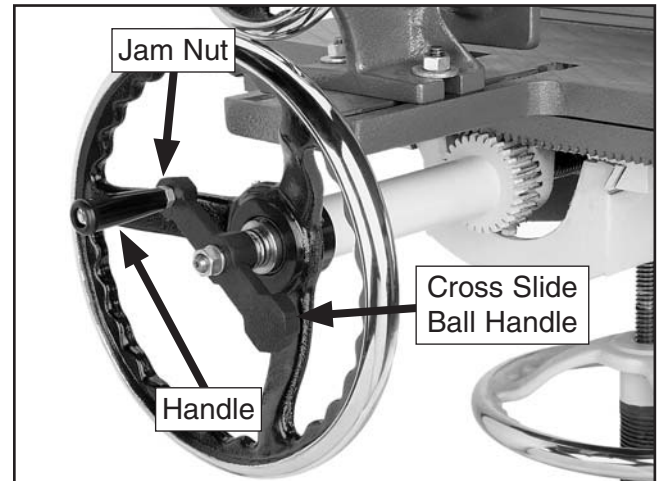
2. Re-install the handle in a slightly forward upright position and secure it with the hex bolt and flat washer.
3. The depth stop hex nuts have been adjusted at the factory to prevent the head from moving during shipping. Thread both hex nuts up the depth stop bolt so that you can lower the head (see **Figure 10**).



**Figure 10.** Depth stop hex nuts and bolt.

4. Remove the handle from the rear of the cross slide ball handle, then re-install it from the front (see **Figure 11**).

**Note:** *Tighten the bolt into the ball handle with enough clearance between the handle and the jam nut so that the handle freely rotates.*



**Figure 11.** Cross slide handle correctly installed.





# Test Run

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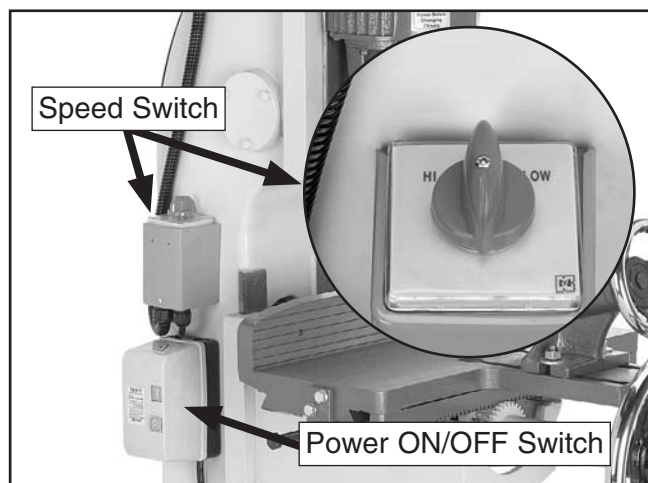
Once the assembly is complete, test run your machine to make sure it runs properly and the motor is turning in the correct direction.

If, during the test run, you cannot easily locate the source of an unusual noise or vibration, stop using the machine immediately, then review the **Troubleshooting** on **Page 30**.

If you still cannot remedy a problem, contact our Tech Support at (570) 546-9663 for assistance.

## To test run the machine:

1. Make sure you have read the safety instructions at the beginning of the manual and that the machine is set up properly.
2. Make sure all tools and objects used during setup are cleared away from the machine and, if installed, the mortising chisel and bit are properly secured and clear of any obstacles (refer to **Mortising Chisel & Bit** on **Page 17** for detailed instructions).
3. Connect the machine to the power source.
4. Move the speed switch to the OFF position, then push the top green button of the power ON/OFF switch to allow power to flow to the machine (see **Figure 12**).



**Figure 12.** Power ON/OFF and speed switches.

5. Move the speed switch to LOW to turn the machine **ON**, then listen to and watch for abnormal noises or actions. The machine should run smoothly with little or no vibration or rubbing noises.

—Strange or unusual noises should be investigated and corrected before operating the machine further. Always disconnect the machine from power when investigating or correcting potential problems.

6. Move the speed switch to the OFF position to turn the machine **OFF**.

7. As you are waiting for the chuck to come to a complete stop, notice which direction it spins as viewed from the top looking down.

—If the chuck is rotating in a clockwise direction, the **Test Run** is complete.

—If the chuck rotates counterclockwise, the machine is wired out of phase. Disconnect the machine from the power source, then switch any two of the hot power leads coming into the machine. Retest the rotation direction.

---

## Recommended Adjustments

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For your convenience, the adjustments listed below have been performed at the factory.

However, because of the many variables involved with shipping, we recommend that you at least verify the following adjustments to ensure the best possible results from your new machine.

Step-by-step instructions for these adjustments can be found in the **SERVICE** section starting on **Page 30**.

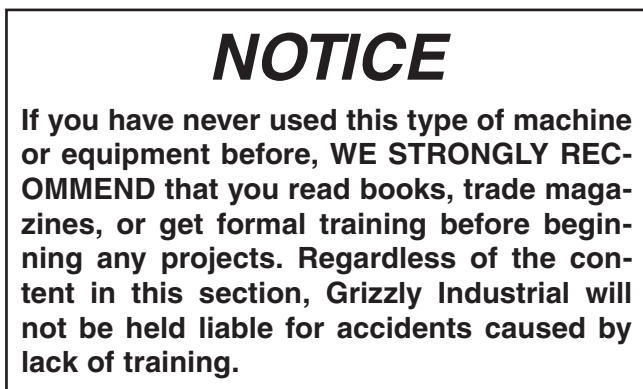
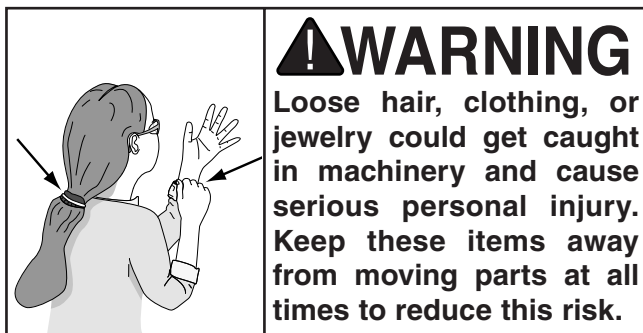
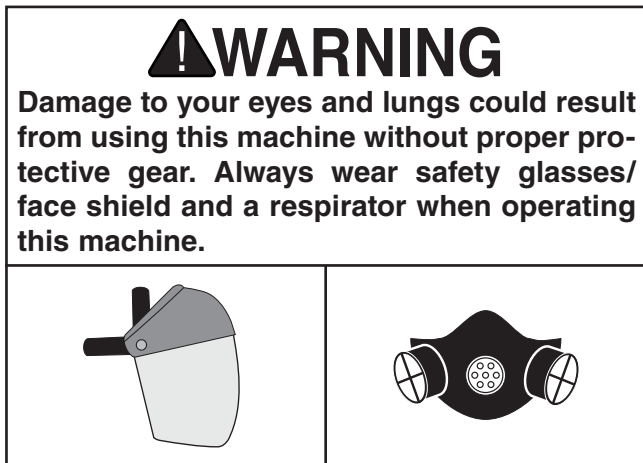
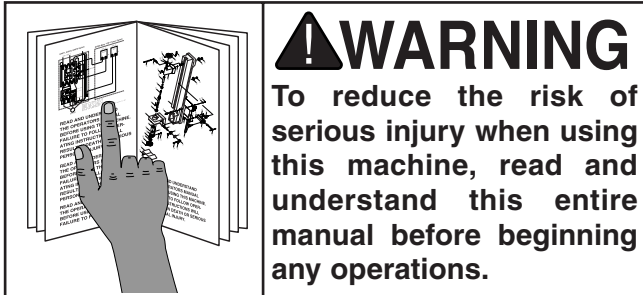
### Factory adjustments that should be verified:

1. Table perpendicular to the chisel (**Page 23**).
2. Gib adjustment (**Page 32**).



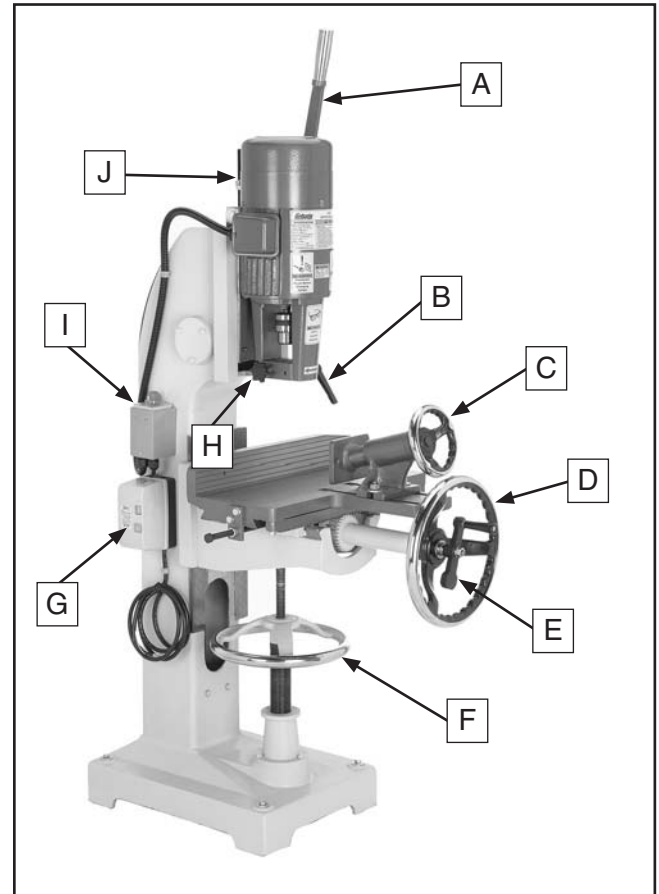
# SECTION 4: OPERATIONS

## Operation Safety



## Basic Controls

Use **Figure 13** and the following descriptions to become familiar with the basic controls of your mortising machine.



**Figure 13.** Model G4814 basic controls.

- A. Operating Handle:** Lowers the mortising chisel and bit into the workpiece when pulled down.
- B. Chisel Sleeve Lock Lever:** Secures the chisel and sleeve in the chisel housing.
- C. Vise Clamp Handwheel:** Tightens the vise clamp against the workpiece when rotated clockwise.
- D. Longitudinal Handwheel:** Moves the table left and right when rotated (X-axis).



- E. **Cross Slide Handwheel:** Moves the table back and forth when rotated (Y-axis).
- F. **Vertical Handwheel:** Raises or lowers the table when rotated (Z-axis).
- G. **Power ON/OFF Switch:** Allows power to flow to the machine.
- H. **Chisel Sleeve Lock Knob:** Secures the chisel and sleeve in the chisel housing.
- I. **Speed Switch:** Changes spindle speed to high (3450 RPM) or low (1725 RPM), or stops spindle rotation.
- J. **Depth Stop:** Limits the downward travel of the mortising chisel and bit.

## Mortising Chisel & Bit



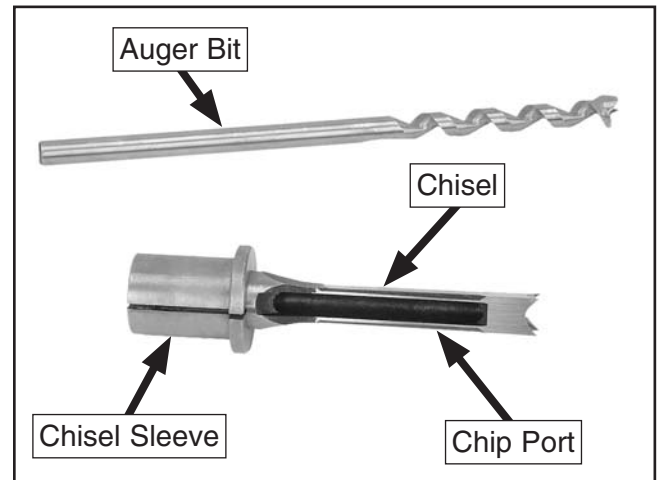
Mortising chisels and bits are always provided as a matched set so that the bit is the correct diameter for the chisel. The auger bit does the majority of the work making the hole, then the chisel squares the hole as downward pressure is applied.

### Installing Mortising Chisel and Bit

1. DISCONNECT MACHINE FROM POWER!
2. Separate the auger bit from the chisel.

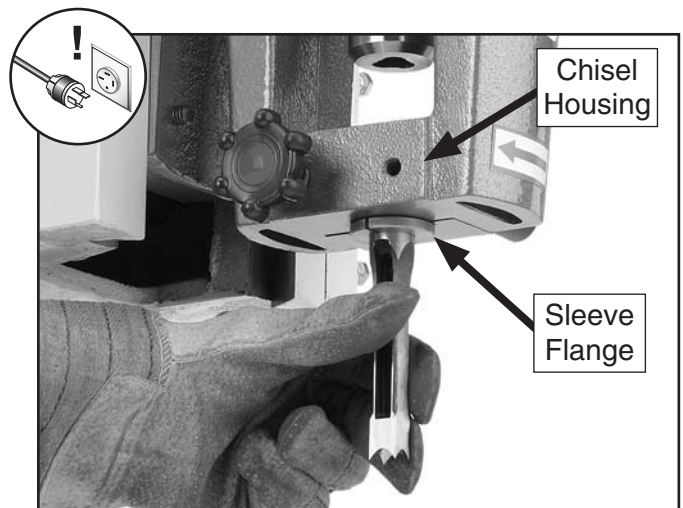
3. Insert the round end of the chisel into the correct chisel sleeve, as shown in **Figure 14**, making sure the flange of the sleeve is facing down.

**Note:** A  $\frac{5}{8}$ " and  $\frac{3}{4}$ " chisel sleeve are included with your mortising machine.



**Figure 14.** Components of the mortising chisel and bit assembly.

4. From the bottom, insert the chisel and sleeve assembly into the chisel housing so that the flange of the sleeve is up against the bottom of the housing, as shown in **Figure 15**.



**Figure 15.** Chisel and sleeve installed into the chisel housing.

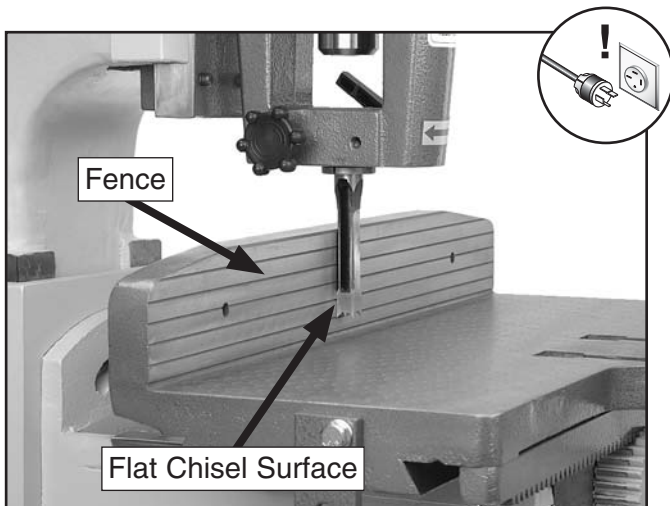


- Turn the chisel so that the chip port is facing either left or right and away from the operator.

**Note:** As the auger bit brings the chips up through the center of the chisel, they will be expelled through the chip port. Facing the port either left or right allows clearance for this action, especially when cleaning up the center portion of the mortise.

- Tighten the chisel sleeve lock knob or lever to temporarily hold the chisel assembly in place.
- Position the table fence against the back of the chisel, loosen the chisel sleeve locks, then rotate the chisel until the flat surface is square with the fence (see **Figure 16**). Lock both the chisel sleeve lock knob and lever to secure the chisel assembly for operation.

**Note:** This will ensure that the sides of your mortise are square.



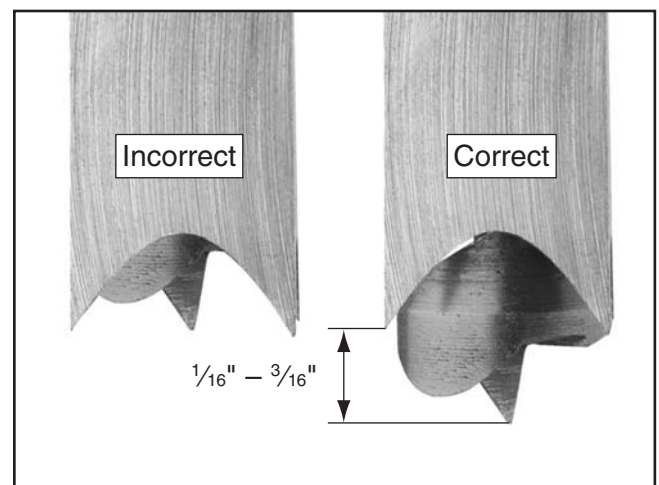
**Figure 16.** Chisel squared with the table fence.

## TIP

**Mortising auger bits operate under extreme conditions. A small amount of pure beeswax applied to the auger bit can aid in reducing heat and expelling chips. It is important that only a small amount is used and that none is applied to the chisel. Beeswax that comes in contact with workpiece surfaces can impede adhesion of glues and finishes.**

- Rotate the outer ring of the chuck counter-clockwise to widen the chuck jaws enough to accept the auger bit shank.
- Insert the auger bit up through the center of the chisel and into the chuck until the center tip of the bit extends  $\frac{1}{16}$ "– $\frac{3}{16}$ " below the chisel points, as shown in **Figures 17–18**, then insert the chuck key into the chuck and rotate it clockwise to firmly tighten the chuck jaws around the bit shank.

**Note:** The auger bit makes the hole that the chisel squares up—thus, the auger bit must drill into the workpiece first. This setting provides enough clearance for the auger to bring the chips up through the chisel and out the chip port. Experience will be the best guide as to what the correct distance should be for your operation.



**Figure 17.** Distance between auger bit point and chisel points.







**Figure 18.** Auger bit and chisel correctly installed.

## Removing Mortising Chisel and Bit

1. DISCONNECT MACHINE FROM POWER!
2. Allow the chisel and bit to cool, then, with heavy leather gloves, support the auger bit and use the chuck key to loosen the chuck jaws until the bit releases into your hand.
3. Support the chisel with your protected hand and loosen both chisel sleeve locks, then remove the chisel and sleeve from the machine.
4. Clean chips and dust from the removed parts, apply a non-staining protectant, then store them in a dry, protected location to keep them rust-free and sharp.

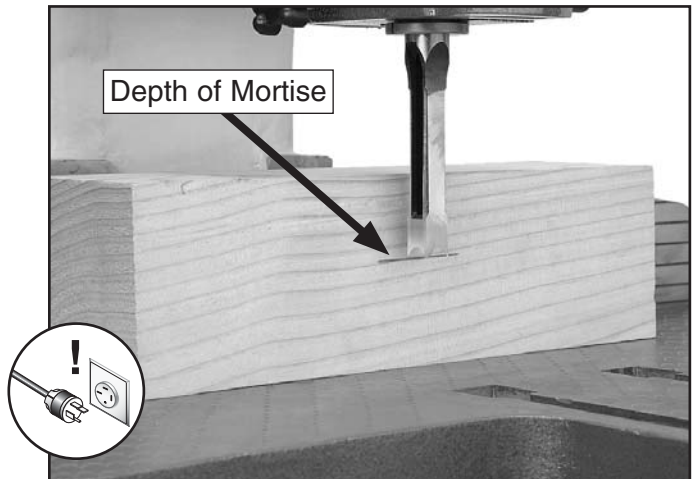
# Adjusting Depth Stop

The depth stop is used to create a mortise of a specific depth by limiting the downward movement of the head.

**Note:** *When calculating the depth of the mortise, you want to leave a little room beyond the chisel points for glue squeeze out. Usually, the indent at the bottom of the mortise made by the auger bit is sufficient, but this can vary.*

### To adjust the depth stop:

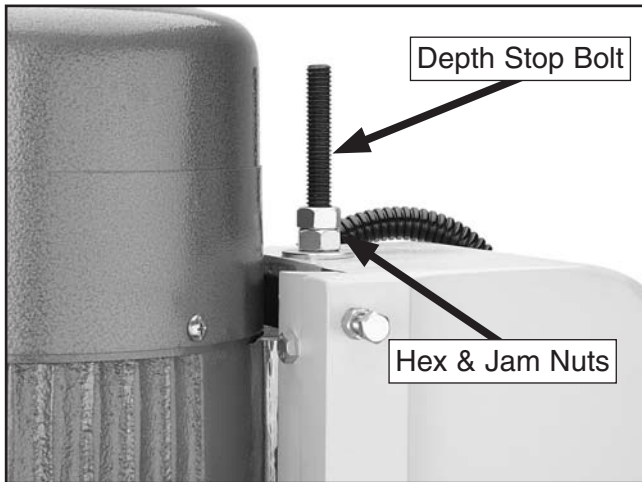
1. DISCONNECT MACHINE FROM POWER!
2. Mark the desired depth of the mortise on the front face of the workpiece, then place it on the table against the fence.
3. Raise the hex nuts to the top of the depth stop bolt.
4. Position the table and workpiece so that the installed chisel can be lowered in front of the workpiece, then bring the chisel down so that the chisel points are even with the mark made in **Step 2** (see **Figure 19**).



**Figure 19.** Positioning the chisel with the workpiece for adjusting the correct depth of stop.



5. While keeping the chisel at that depth, thread the bottom depth stop hex nut down to the head casting, then secure it in place with the top jam nut, as shown in **Figure 20**.



**Figure 20.** Example of depth stop adjustment.

6. Use the operating handle to raise and lower the chisel and bit to check that the depth stop is properly adjusted.

—If the depth stop is not properly adjusted for your operation, thread the hex nuts up and repeat **Steps 4–5**.

## Clamping Workpiece with Vise

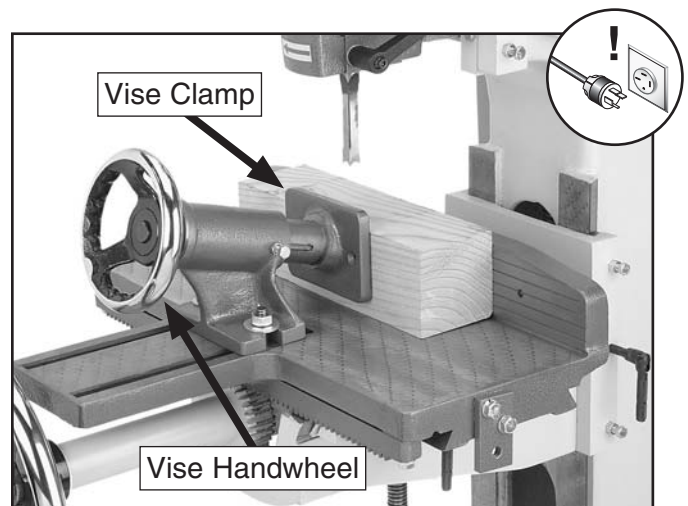
### **!WARNING**

A workpiece that is not properly secured to the table with the vise or other clamping devices could move during the mortising operation. Under these circumstances, the chisel or bit could bind and break apart and could cause serious personal injury. This situation, at the least, will produce poor mortising results. Always secure the workpiece to the table and up against the fence.

The vise secures the workpiece against the fence so that it will not move on the table during operation. Also, the vise can be positioned at an angle for mortises that are not parallel to the sides of the workpiece.

### Clamping Workpiece Parallel to the Fence

1. DISCONNECT MACHINE FROM POWER!
2. Place the workpiece flat on the table and against the fence, push the vise clamp assembly against the workpiece, then rotate the handwheel to firmly secure it with the clamp, as shown in **Figure 21**.

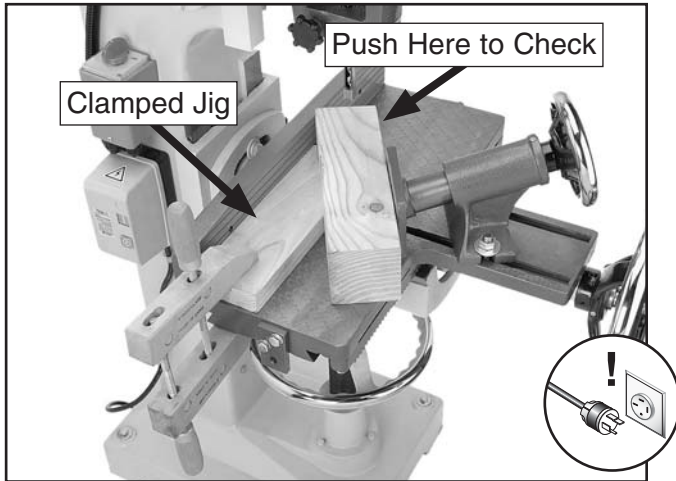


**Figure 21.** Workpiece clamped against the fence.



## Clamping Workpiece at an Angle to the Fence

1. DISCONNECT MACHINE FROM POWER!
2. Clamp a jig to the table and against the fence that will match the angle needed for the mortise (see **Figure 22** for an example).



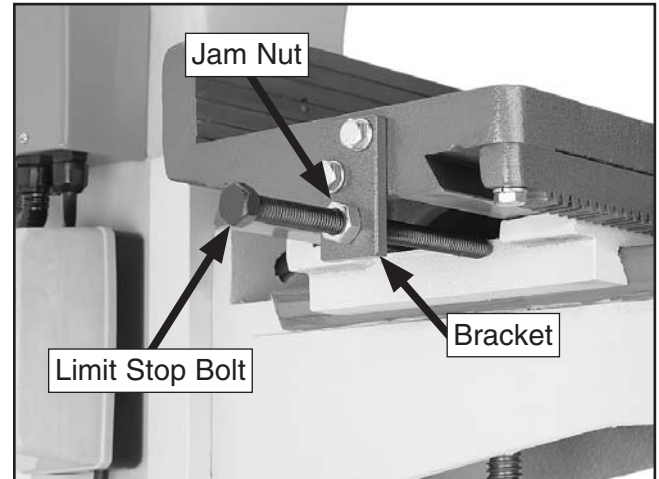
**Figure 22.** Workpiece clamped at an angle.

3. Push the vise clamp assembly against the workpiece, then rotate the handwheel to firmly secure it against the jig and fence.
4. Put moderate pressure sideways against the workpiece to make sure it will not slip during the operation.

—If the workpiece does slip when moderate pressure is applied, reposition and re-clamp the jig and workpiece until it remains secure under pressure.

## Longitudinal Limit Stops

The longitudinal limit stops are used to limit the distance the table can travel along the X-axis (from side-to-side), as shown in **Figure 23**.



**Figure 23.** Longitudinal limit stop installed.

The most common use of the limit stops is to confine the table travel to the width of the mortise for repetitive production.

Tools Needed	Qty
Wrench 19mm .....	1

### To use the longitudinal limit stop:

1. DISCONNECT MACHINE FROM POWER!
2. Properly mount the workpiece to the table and align the mortising chisel and bit above one side of the intended mortise.
3. Thread a limit stop bolt into the bracket on the same side of the table until it just touches the knee underneath the table, as shown in **Figure 23**, then tighten the jam nut up to the bracket to hold the bolt in place.
4. Repeat **Steps 2–3** for the other side of the mortise.

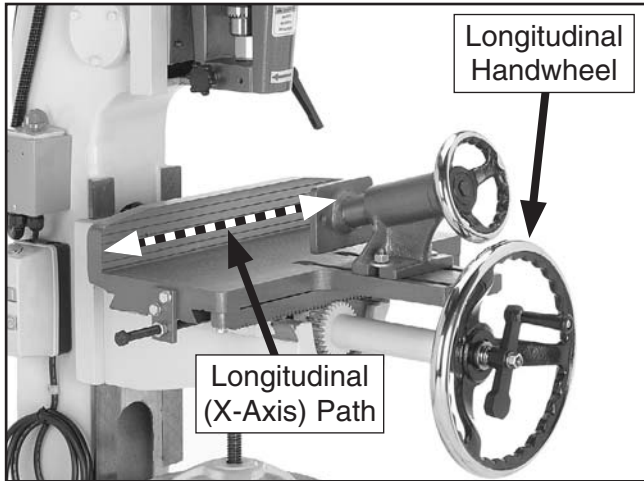


# Table Controls

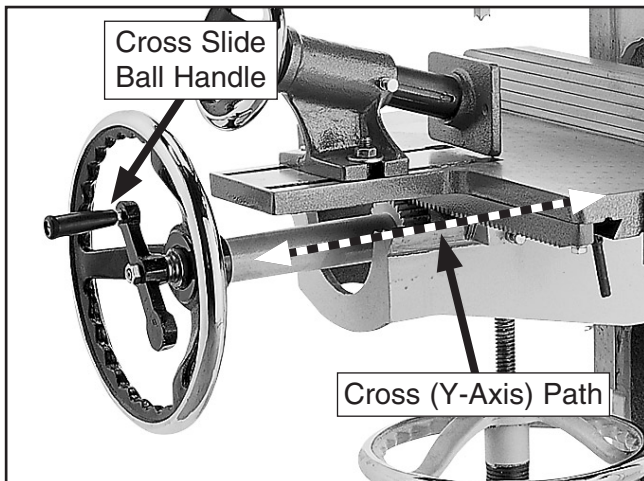
## Table Travel

Longitudinal (X-Axis) .....	18"
Cross (Y-Axis).....	5"
Vertical (Z-Axis) .....	12"

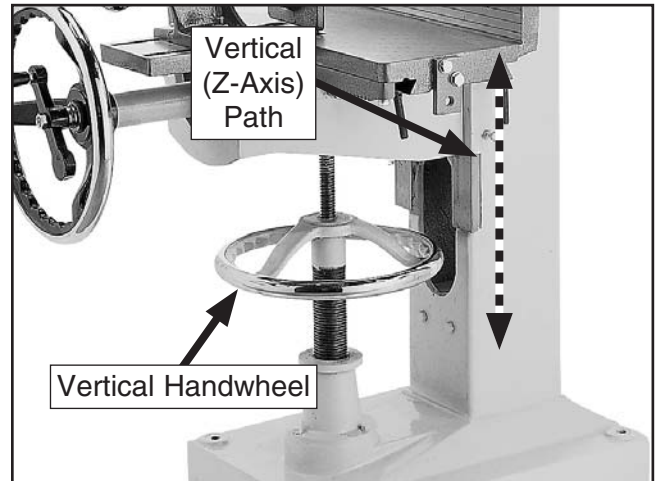
The work table has three paths of movement, each controlled by a separate manual handwheel or ball handle. Refer to **Figures 24–26** to identify the controls for each path.



**Figure 24.** Longitudinal handwheel.

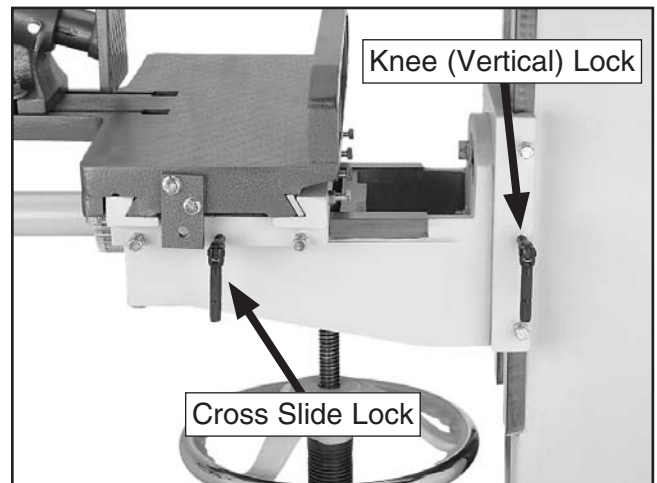


**Figure 25.** Cross slide ball handle.



**Figure 26.** Vertical handwheel.

When the mortise to be cut is parallel to the table fence, tighten the table and knee locks shown in **Figure 27** to keep the workpiece from unexpectedly moving in a cross or vertical direction.



**Figure 27.** Cross slide and knee locks.





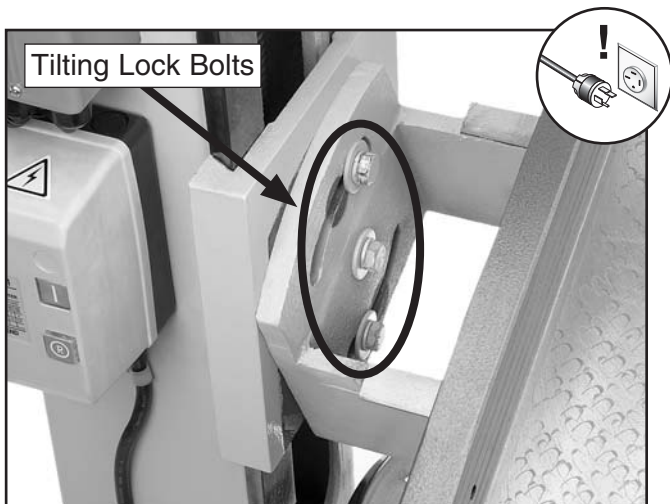
# Table Tilt

The table can be tilted 30° to the left or right. Using this feature and a table jig, you can make a mortise of various angles.

## Tilting the Table

Tools Needed	Qty
Wrench 19mm .....	1

1. DISCONNECT MACHINE FROM POWER!
2. Use the cross slide handwheel to move the table all the way forward, then loosen the three tilting lock bolts shown in **Figure 28** until the table can be tilted.



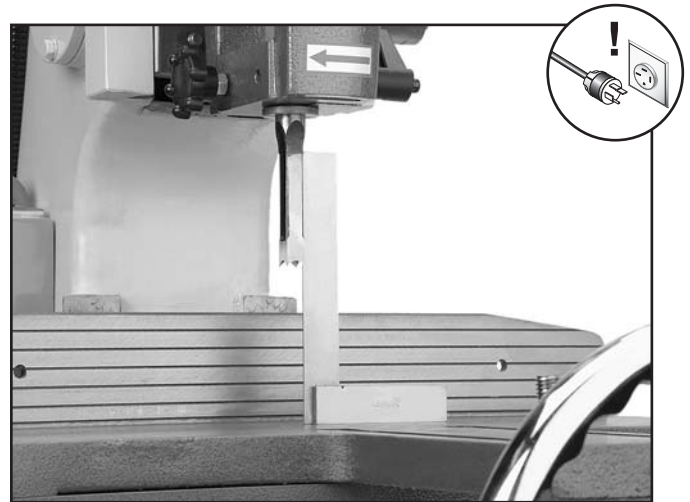
**Figure 28.** Table tilting lock bolts.

3. Manually tilt the table to the desired angle, then re-tighten the lock bolts to secure the setting.

## Adjusting Table Perpendicular to Chisel

Tools Needed	Qty
Wrench 19mm .....	1
Machinist's Square .....	1

1. DISCONNECT MACHINE FROM POWER!
2. Install a mortising chisel that you know is straight and square without the auger bit.
3. Slightly loosen the table tilting lock bolts.
4. Raise the table so that you can position the machinist's square to the side and up against the flat part of the chisel and flat on the table, as shown in **Figure 29**.



**Figure 29.** Adjusting the table tilt square with the chisel.

5. Adjust the table so that it is square with the table from side-to-side, then re-tighten the tilting lock bolts.



# Mortising Operation

A proper mortise and tenon is one of the strongest methods of joining two pieces of wood. Although the Model G4814 makes the process of mortising easy and efficient, there are other considerations when making a good mortise and tenon joint, such as thickness of the tenon and mortise cheeks, depth of the mortise, species of wood, etc.

Read books from the experts (refer to **ACCESSORIES** on **Page 25**), get advice from experienced woodworkers, and practice!

To ensure that the settings of the machine are correct for your operation, we recommend making the mortise on a test piece of stock that is the same dimension and wood type as the final workpiece.

## To make a mortise with your mortising machine:

1. DISCONNECT MACHINE FROM POWER!
2. Install the mortising chisel and bit that is correct for the mortise, as instructed on **Page 17**.
3. Make sure that the table is perpendicular to the chisel (refer to **Page 23**), or that it is tilted at a correct angle for your operation.
4. Precisely mark the outline of the mortise on the workpiece, then set the depth stop, as instructed on **Page 19**.
5. Properly position and clamp the workpiece so that it is flat on the table and firmly up against the fence.

—If you are making a mortise completely through the workpiece, place a sacrificial wood scrap underneath it to avoid damaging the table and tooling. Make it slightly less in width so that it does not interfere with the vise clamp.

—If you will be making the same mortise in additional workpieces, install and set the longitudinal limit stops, as instructed on **Page 21**.

6. Use the table controls (refer to **Page 22**) to position the mortising chisel above the workpiece and aligned with one side of the marks made in **Step 4**.

**Note:** *With the machine OFF, use the operating handle to lower the chisel and bit to check the alignment.*

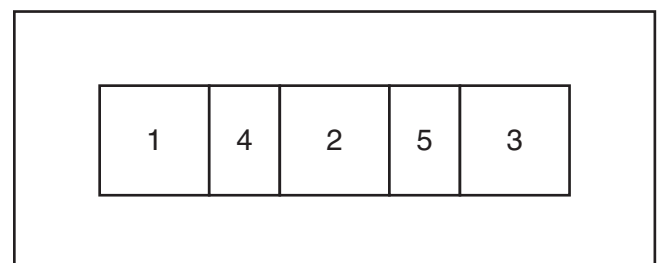
7. Turn the machine **ON**, use the speed switch to select a speed, then pull the operating handle down with even pressure to feed the mortising chisel and bit into the workpiece.

—The speed of the machine and the downward feed rate must be fast enough to prevent the auger tip from burning the wood, but slow enough to prevent the motor from stalling. These settings will vary depending on the wood type, moisture content, and the efficiency of chip clearing from the mortise.

—When cutting deep mortises or if the hole clogs with chips, make shallow cuts (1" or less), then bring the chisel and bit up until the chips clear from the chip port before cutting deeper.

8. Turn the machine **OFF** and repeat **Steps 6–7** in the pattern illustrated in **Figure 30** until the mortise is complete.

**Note:** *Do not overlap the cuts. This will leave one side of the chisel unsupported by the wood and cause chisel chatter and poor results. Leave small amounts of wood in between the holes which can be cleaned up with additional cuts at the end of the operation. Always keep the front and back of the chisel supported by the wood.*



**Figure 30.** Example of a mortise cutting sequence.



# SECTION 5: ACCESSORIES

## Premium Mortising Chisels and Bits

**T10016**— $\frac{1}{4}$ "

**T10017**— $\frac{5}{16}$ "

**T10018**— $\frac{3}{8}$ "

**T10019**— $\frac{1}{2}$ "

**T10020**— $\frac{5}{8}$ "

**T10021**— $\frac{3}{4}$ "

**T10022**—1"

These Premium Mortising Chisels and Bits are precision machined and factory sharpened for perfect results right out of the box. We tested just about every name brand Mortising Chisel on the market including some from Europe and tested them side by side against these made in Japan. It is our opinion that there is not a mortising chisel and bit on the market today that is better in quality and performance than these. Expensive? Yes. Worth it? Absolutely! Each hollow mortising chisel has a  $\frac{3}{4}$ " O.D. shank to fit a standard  $\frac{3}{4}$ " chisel sleeve. Made with pride in Japan.

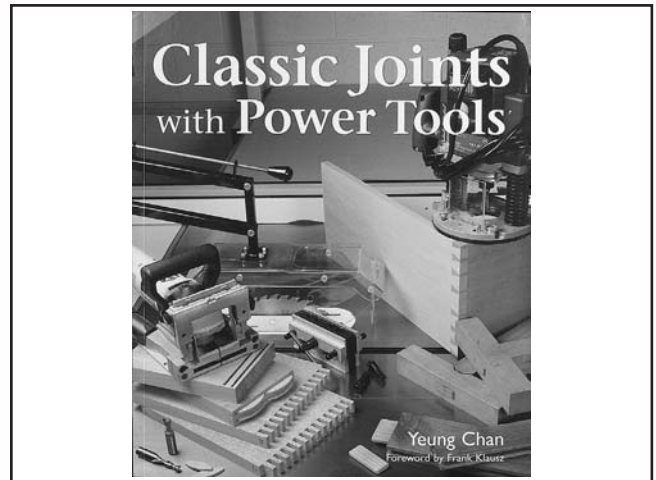


**Figure 31.** Premium Mortising Chisels and Bits.

**Call 1-800-523-4777 To Order**

## H7237—Classic Joints with Power Tools

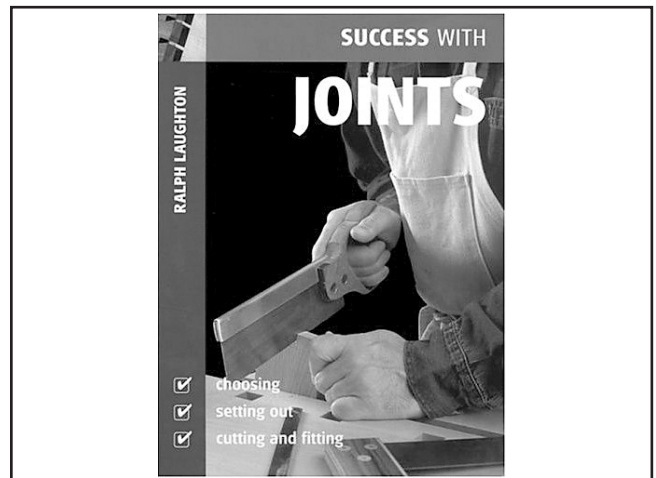
If you think cutting dovetails or making a mortise and tenon is beyond your skills, relax. Take this easy approach for cutting these classic joints, and many more, using common shop machinery. Includes many shop-made jigs. 175 pages.



**Figure 32.** Classic Joints with Power Tools.

## T20386—Success with Joints

Joints that fit tightly and last for generations are a hallmark of proud craftsmanship. Skills for making professional-quality joints are made much easier with the methodical and clear approach by master craftsman Ralph Laughton. He starts with choosing the appropriate joint for the purpose, and ends with proper assembly for the finished piece. 176 pages.



**Figure 33.** Success with Joints.



**H8257—Primrose Armor Plate with Moly-D Machine and Way Oil 1 Quart**

This superior machine and way lubricant prevents stick slip and chatter due to anti-friction capabilities resulting in greater precision machining capabilities. Provides the thinnest oil film possible while effectively providing needed lubrication and rust/corrosion protection. Adhesive/cohesive components are added for vertical surfaces. Resists squeeze out, running, dripping and non-gumming.



**Figure 34.** Primrose Armor Plate Lubricant.

- G5562—SLIPIT® 1 Qt. Gel
- G5563—SLIPIT® 12 oz Spray
- G2871—Boeshield® T-9 12 oz Spray
- G2870—Boeshield® T-9 4 oz Spray
- H3788—G96® Gun Treatment 12 oz Spray
- H3789—G96® Gun Treatment 4.5 oz Spray



**Figure 35.** Recommended products for protecting unpainted cast iron/steel parts on machinery.

**Call 1-800-523-4777 To Order**

- T20501—Face Shield Crown Protector 4"
- T20502—Face Shield Crown Protector 7"
- T20503—Face Shield Window
- T20448—Economy Clear Safety Glasses
- T20452—"Kirova" Anti-Reflective Glasses
- T20456—"Dakura" Clear Safety Glasses
- H0736—Shop Fox® Safety Glasses

These glasses meet ANSI Z87.1-2003 specifications. Buy extras for visitors or employees. You can't be too careful with shop safety!



**Figure 36.** Our most popular eye protection.

- T20514—Small Half-Mask Respirator
  - T20515—Medium Half-Mask Respirator
  - T20516—Large Half-Mask Respirator
  - T20511—Pre-Filter P100
  - T20539—Cartridge Filter 2PK P100
  - T20541—Cartridge Filter 2PK P100 & O Vapor
- Wood and other types of dust can cause severe respiratory damage. If you work around dust every-day, a half-mask respirator can greatly reduce your risk. Compatible with safety glasses!



**Figure 37.** Half-mask respirator with disposable cartridge filters.



# SECTION 6: MAINTENANCE

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**NOTICE**  
This maintenance schedule is based on average usage. Adjust the maintenance schedule to match your actual usage to keep your mortising machine running smoothly and to protect your investment.

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## Schedule

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For optimum performance from your machine, follow this maintenance schedule and refer to any specific instructions given in this section.

**Daily Check:**

- Loose mounting bolts.
- Damaged or worn mortising chisels and bits.
- Worn or damaged wires.
- Any other unsafe condition.

**Daily Maintenance:**

- Clean the machine.
- Clean and lubricate the dovetail ways (**Page 28**).
- Lubricate the ball oilers (**Page 29**).

**Monthly Maintenance:**

- Clean and lubricate the leadscrews and table gearing (**Page 29**).

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## Cleaning & Protecting

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Use a shop vacuum to remove wood chips and dust from the machine, then wipe off the remaining dust with a dry cloth. If any resin has built up, use a resin dissolving cleaner to remove it

Wipe built-up grime from the unpainted surfaces of the machine with a rag and a mild solvent. Remove any rust from these surfaces, then treat them with regular applications of products such as Primrose Armor Plate Way Oil, G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see **Section 5: Accessories** on **Page 25** for more details).





# Lubrication

Your mortising machine has numerous metal sliding surfaces that require proper lubrication to help ensure smooth and long-lasting operation.

Other than lubrication points covered in this section, all other bearings are internally lubricated and sealed at the factory. Simply leave them alone unless they need to be replaced.

To avoid contaminating the lubrication or damaging the metal surfaces, always clean away debris and grime from the parts and entry points before adding new lubricant.

**DISCONNECT THE MACHINE FROM POWER BEFORE PERFORMING LUBRICATION!**

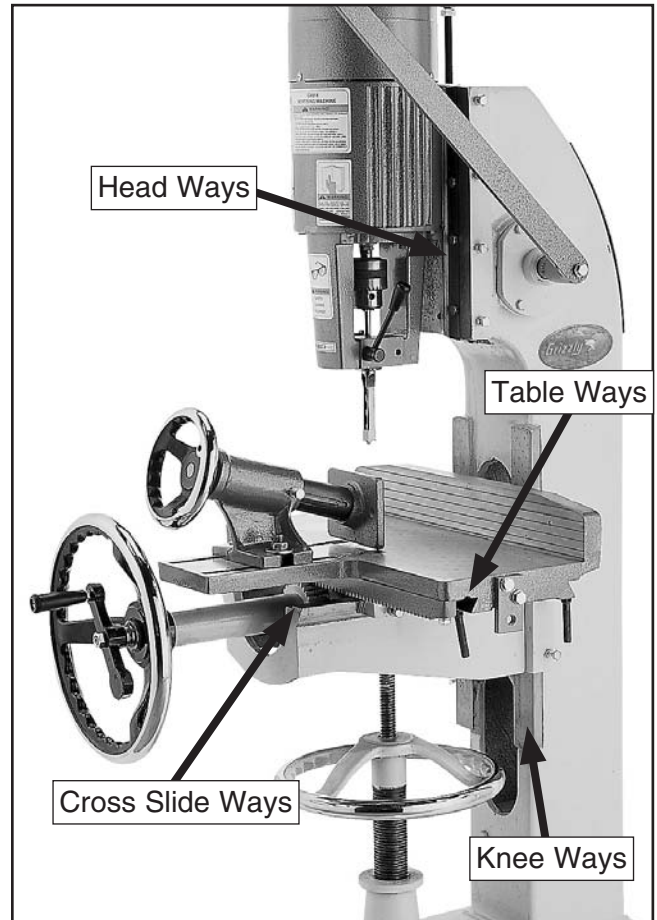
## **NOTICE**

**Follow the lubrication practices outlined in this manual. Failure to do so could lead to premature failure of your mortising machine and will void the warranty.**

## **Dovetail Ways**

Lubricant	Frequency	Qty
Quality Way Oil	Every 8 Hours of Operation	Thin Coat

Move the table, cross slide, knee, and head as required to access the entire length of the dovetail ways (see **Figure 38**), then clean away built-up grime with a shop rag and mineral spirits. Apply a thin coat of quality way oil to the unpainted surfaces of the ways and move the components through their entire range of motion to distribute the lubricant.



**Figure 38.** Dovetail ways.

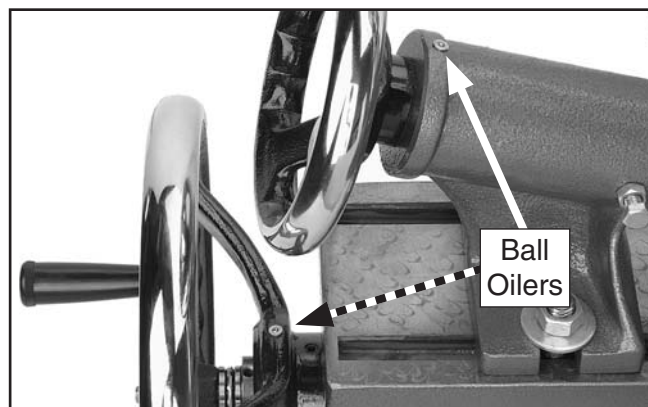
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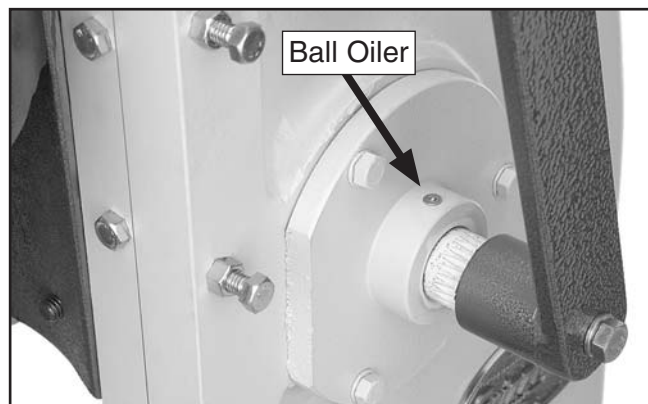
## Ball Oilers

Lubricant	Frequency	Qty
ISO 68 Lubricant or Equivalent	Every 8 Hours of Operation	1 Squirt

Wipe the ball oilers and the immediate area clean, then depress the ball with the tip of an oil can and squirt once. Refer to **Figures 39–41** for the locations of the four ball oilers.



**Figure 39.** Handwheel ball oilers.



**Figure 40.** Operating handle pivot (right side).

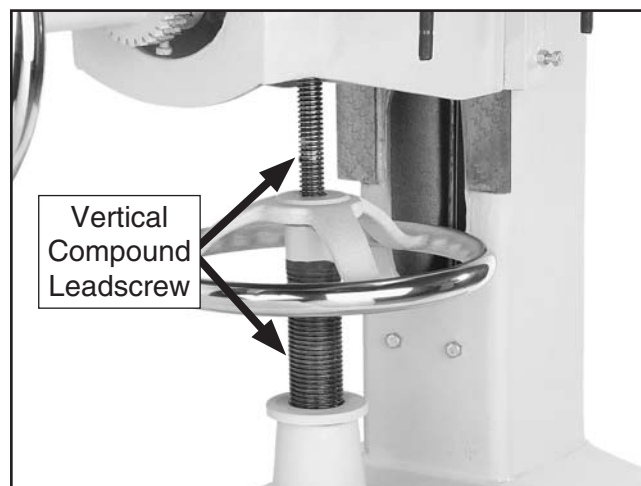


**Figure 41.** Operating handle pivot (left side).

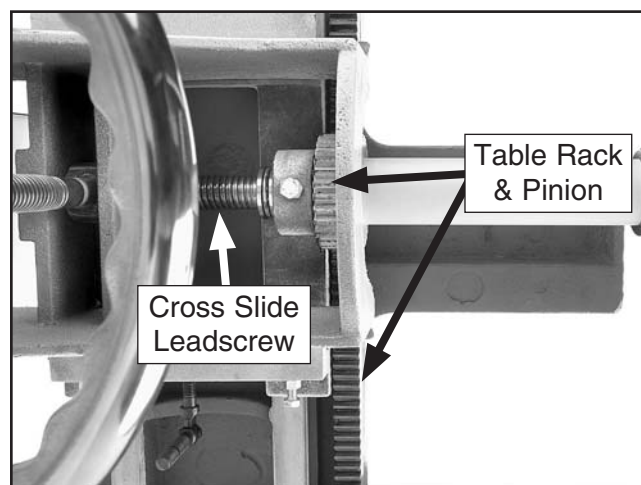
## Leadscrews & Table Gearing

Lubricant	Frequency	Qty
NLGI #2 Grease or Equivalent	Monthly	Thin Coat

Use shop rags and mineral spirits to clean away the built-up grime from the leadscrews and table gearing shown in **Figures 42–43**. Brush on a thin coat of grease and move the components through their full range of motion to distribute the lubricant.



**Figure 42.** Vertical compound leadscrew.



**Figure 43.** Cross slide leadscrew and table rack and pinion gearing (viewed from underneath the knee).



# SECTION 7: SERVICE

Review the troubleshooting and procedures in this section to fix or adjust your machine if a problem develops. If you need replacement parts or you are unsure of your repair skills, then feel free to call our Technical Support at (570) 546-9663.

## Troubleshooting



### Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start or a breaker trips.	<ol style="list-style-type: none"> <li>1. Power supply switched <b>OFF</b> or at fault.</li> <li>2. Plug/receptacle at fault/wired wrong.</li> <li>3. Motor connection wired wrong.</li> <li>4. Thermal overload relay has tripped.</li> <li>5. Wall circuit breaker tripped.</li> <li>6. Contactor not energized/has poor contacts.</li> <li>7. Wiring open/has high resistance.</li> <li>8. Main power ON/OFF switch at fault.</li> <li>9. Speed switch at fault.</li> <li>10. Motor at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure power supply is <b>ON</b>/has correct voltage.</li> <li>2. Test for good contacts; correct the wiring.</li> <li>3. Correct motor wiring connections (<b>Page 35</b>).</li> <li>4. Reset; adjust trip load dial if necessary; replace.</li> <li>5. Ensure circuit size is correct/replace weak breaker.</li> <li>6. Test all legs for power/replace if faulty.</li> <li>7. Check/fix broken, disconnected, or corroded wires.</li> <li>8. Replace switch.</li> <li>9. Test/replace switch.</li> <li>10. Test/repair/replace.</li> </ol>
Machine stalls or is underpowered.	<ol style="list-style-type: none"> <li>1. Workpiece material not suitable for machine.</li> <li>2. Workpiece crooked; vise clamp loose or mis-adjusted.</li> <li>3. Motor wired incorrectly.</li> <li>4. Plug/receptacle at fault.</li> <li>5. Motor bearings at fault.</li> <li>6. Machine undersized for task.</li> <li>7. Contactor not energized/has poor contacts.</li> <li>8. Motor overheated.</li> <li>9. Speed switch at fault.</li> <li>10. Motor at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Only cut wood/ensure moisture is below 20%.</li> <li>2. Straighten or replace workpiece/adjust vise clamp.</li> <li>3. Wire motor correctly (<b>Page 35</b>).</li> <li>4. Test for good contacts/correct wiring.</li> <li>5. Test/repair/replace.</li> <li>6. Use sharp chisels and bits/reduce feed rate/use low speed.</li> <li>7. Test all legs for power/replace if faulty.</li> <li>8. Clean motor, let cool, and reduce workload.</li> <li>9. Test/replace switch.</li> <li>10. Test/repair/replace.</li> </ol>
Machine has vibration or noisy operation.	<ol style="list-style-type: none"> <li>1. Motor or component loose.</li> <li>2. Machine incorrectly mounted.</li> <li>3. Workpiece loose.</li> <li>4. Motor fan rubbing on fan cover.</li> <li>5. Motor bearings at fault.</li> <li>6. Chuck or chisel and bit at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect/replace damaged bolts/nuts, and re-tighten with thread locking fluid.</li> <li>2. Tighten mounting bolts; relocate/shim machine.</li> <li>3. Make sure workpiece is flat on table/ re-clamp/use correct jig.</li> <li>4. Fix/replace fan cover; replace loose/damaged fan.</li> <li>5. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.</li> <li>6. Replace out-of-round chuck, dull, or bent chisel or bit.</li> </ol>





## Mortising Operation

Symptom	Possible Cause	Possible Solution
Difficult to pull operating handle down during operation.	<ol style="list-style-type: none"> <li>1. Auger bit does not protrude far enough from the end of the chisel.</li> <li>2. Chisel or bit is dull or damaged.</li> <li>3. Head gibs are too tight.</li> <li>4. Head spring tension too much.</li> </ol>	<ol style="list-style-type: none"> <li>1. Properly adjust auger bit to chisel (<b>Page 17</b>).</li> <li>2. Sharpen/replace chisel and bit as matched set.</li> <li>3. Adjust gibs (<b>Page 32</b>).</li> <li>4. Adjust head spring tension (<b>Page 33</b>).</li> </ol>
Mortising chisel and bit are extremely noisy with chatter and smoke. (Some amount of noise is normal for any mortising machine.)	<ol style="list-style-type: none"> <li>1. Too much downward pressure applied.</li> <li>2. Auger bit is out of alignment with chisel.</li> <li>3. Chisel sleeve is damaged or not properly installed.</li> <li>4. Chisel is dull/damaged.</li> <li>5. Chuck is out-of-round or motor shaft is bent.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use less pressure with operating handle; try higher speed.</li> <li>2. Inspect/re-install/replace chisel and bit as a set.</li> <li>3. Inspect/re-install/replace.</li> <li>4. Inspect/sharpen/replace chisel and bit as matched set.</li> <li>5. Inspect/replace.</li> </ol>
Mortising chisel and bit generate excessive smoke and burns the workpiece (a small amount of smoke is normal).	<ol style="list-style-type: none"> <li>1. Chisel or bit is dull or damaged.</li> <li>2. Too much downward pressure applied.</li> <li>3. Wood chips load up in chisel and overheat auger bit.</li> <li>4. Wood is too green, has high moisture content, or is pressure treated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect/sharpen/replace as matched set.</li> <li>2. Use less pressure with operating handle; try higher speed.</li> <li>3. Back out chisel and bit out more frequently to let chips clear; use bees wax on auger bit (<b>Page 18</b>).</li> <li>4. Only mortise dry, untreated wood.</li> </ol>
Mortise is uneven or jagged from side-to-side.	<ol style="list-style-type: none"> <li>1. Chisel is not square to table fence.</li> <li>2. Table is not perpendicular to chisel.</li> <li>3. Chisel is bent.</li> </ol>	<ol style="list-style-type: none"> <li>1. Square chisel to table fence (<b>Page 18</b>).</li> <li>2. Adjust table tilt to make it perpendicular to chisel (<b>Page 23</b>)</li> <li>3. Replace chisel and bit as matched set.</li> </ol>



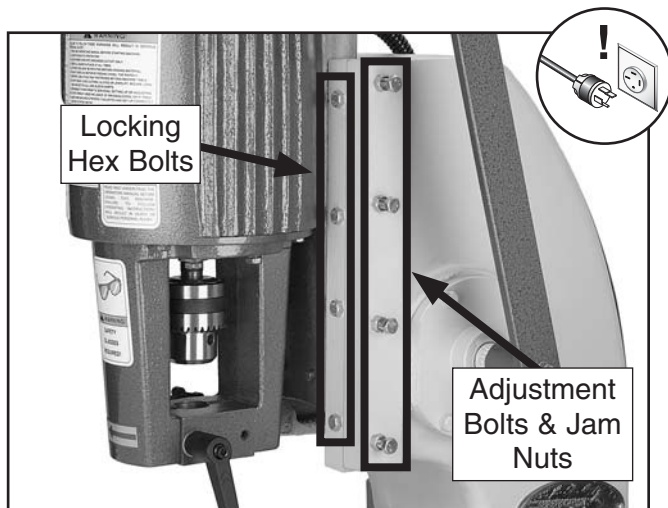
# Adjusting Gibs

Each sliding surface for the head, table, cross slide, and knee has a flat piece of metal or gib that is sandwiched between the stationary and moving surfaces.

Gibs control the accuracy of the head and table movements along the dovetail ways. Tight gibs make the movements more accurate, but harder to move. Loose gibs make the movements sloppy, but easier. The goal of gib adjustment is to remove unnecessary sloppiness without causing the ways to bind.

## Adjusting Head Gib

1. DISCONNECT MACHINE FROM POWER!
2. Loosen the four locking hex bolts that secure the head gib (see **Figure 44**).



**Figure 44.** Head gib locking and adjustment bolts.

3. Loosen the four jam nuts on the adjustment bolts.
4. Evenly turn the adjustment bolts in small increments. Tighten the bolts to make head movement harder, and loosen them to make movement easier. Use the operating handle to test your settings.
5. When you are satisfied with the adjustments, tighten the jam nuts without moving the adjustment bolts, then re-tighten the locking bolts to secure the gib in place.

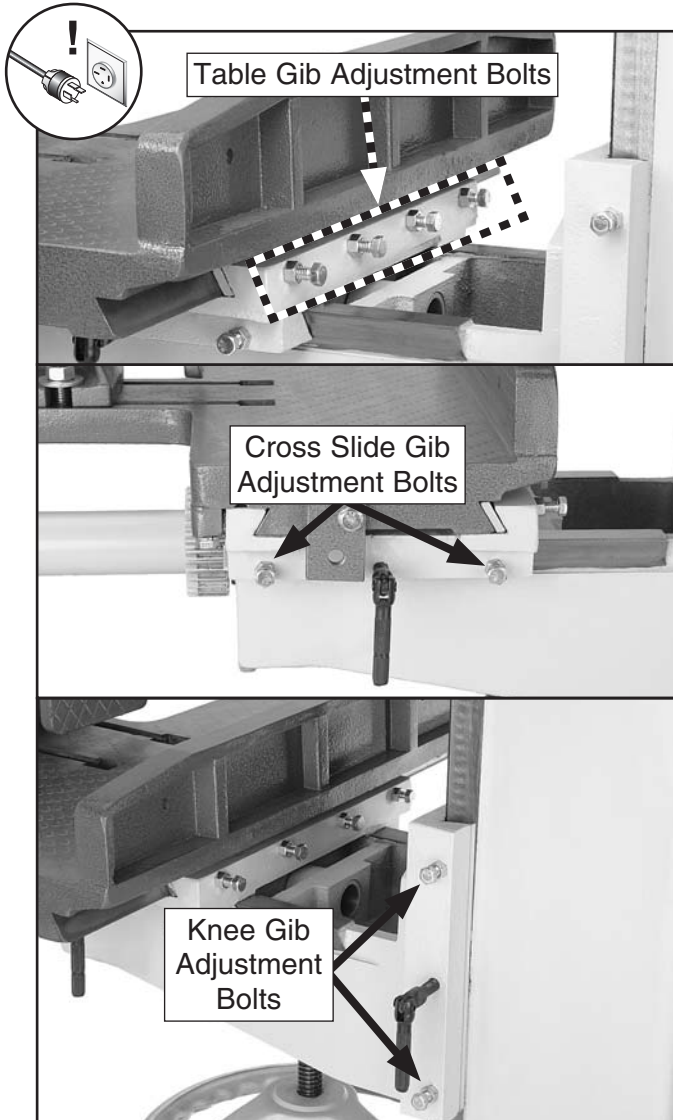
## ***NOTICE***

**Excessively loose gibs may cause poor mortises, and may cause undue wear of sliding surfaces and ways. Over-tightening the gibs may cause premature wear of these sliding devices.**



## Adjusting Table, Cross Slide, & Knee Gibs

1. DISCONNECT MACHINE FROM POWER!
2. Use to **Figure 45** to identify the location of the table, cross slide, and knee gib adjustment bolts and jam nuts.

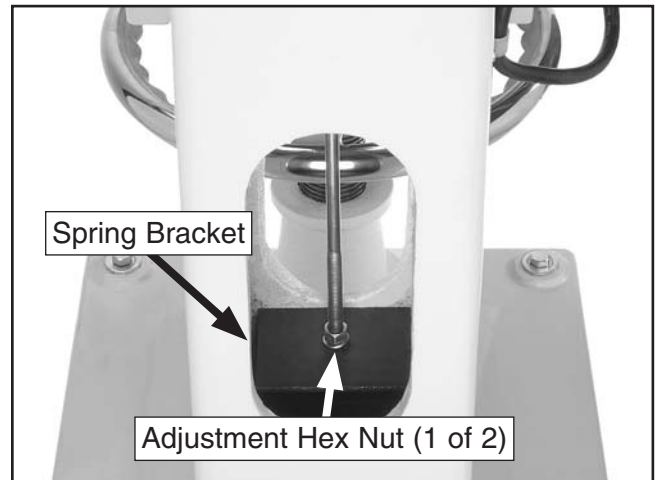


**Figure 45** . Table, cross slide, and knee gib adjustment bolts.

3. Loosen the knee/table lock and the jam nuts on the adjustment bolts, then use the bolts to tighten or loosen the gib.
4. Check your settings by moving the component back and forth.
5. When you are satisfied with the settings, re-tighten the jam nuts without moving the adjustment bolts.

## Adjusting Head Spring Tension

The tension of the heavy-duty head spring can be adjusted to make the operating handle harder or easier to operate by adjusting the hex nuts on both sides of the bracket shown in **Figure 46**. When you are satisfied with the tension, be sure to re-tighten both hex nuts against the bracket.



**Figure 46**. Head spring tension adjustment hex nuts and bracket.



# SECTION 8: WIRING

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Study this section carefully. If there are differences between your machine and what is shown in this section, call Technical Support at (570) 546-9663 for assistance BEFORE making any changes to the wiring on your machine.

## WARNING
















### Wiring Safety Instructions

1. **SHOCK HAZARD.** Working on wiring that is connected to a power source is extremely dangerous. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. Disconnect the power from the machine before servicing electrical components!
2. **QUALIFIED ELECTRICIAN.** Due to the inherent hazards with electricity, only a qualified electrician should perform wiring tasks on this machine. If you are not a qualified electrician, get help from one before attempting any kind of wiring job.
3. **WIRE CONNECTIONS.** All connections must be tight to prevent wires from loosening during machine operation. Double-check all wires disconnected or connected during any wiring task to ensure tight connections.
4. **MODIFICATIONS.** Using non-OEM parts or modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire.
5. **MOTOR WIRING.** The motor wiring shown in the wiring diagram is current at the time of printing, but it may not match your machine. Always use the wiring diagram inside the motor junction box.
6. **WIRE/COMPONENT DAMAGE.** Damaged wires or components increase the risk of serious personal injury, fire, or machine damage. If you notice that any wires or components are damaged while performing a wiring task, replace those wires or components before completing the task.
7. **CIRCUIT REQUIREMENTS.** You MUST follow the requirements on **Page 9** when connecting your machine to a power source.
8. **EXPERIENCING DIFFICULTIES.** If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (570) 546-9663.

#### NOTICE

The photos and diagrams included in this section are best viewed in color. You can view these pages in color at [www.grizzly.com](http://www.grizzly.com).

#### COLOR KEY

BLACK 	BLUE 	YELLOW 	LIGHT BLUE 
WHITE 	BROWN 	YELLOW GREEN 	BLUE WHITE 
GREEN 	GRAY 	PURPLE 	TURQUOISE 
RED 	ORANGE 	PINK 	



# Wiring Diagram

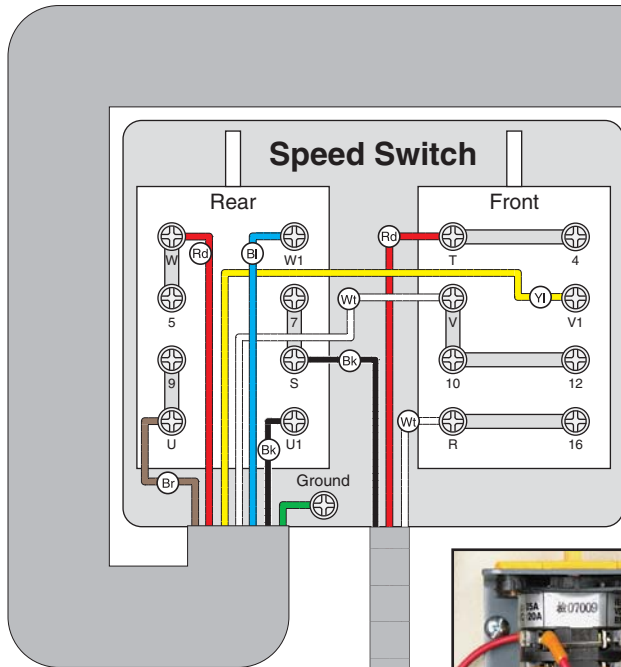


Figure 47. Speed switch wiring.

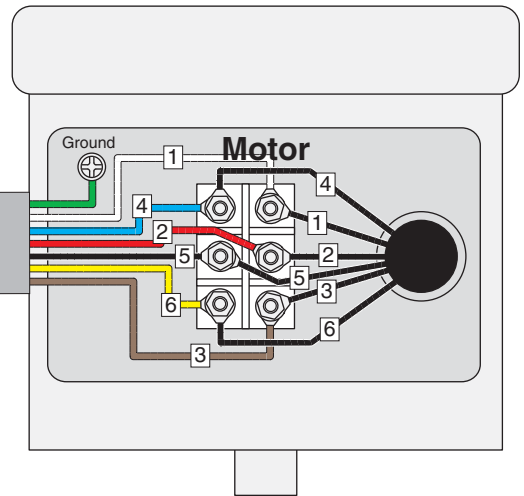


Figure 49. Motor wiring.

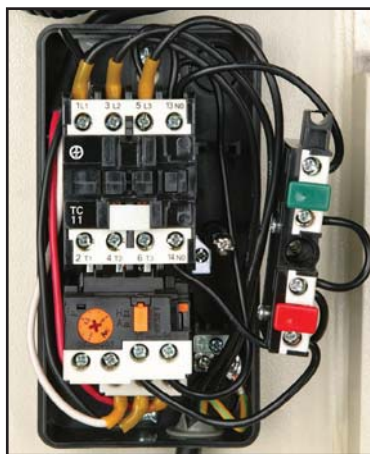
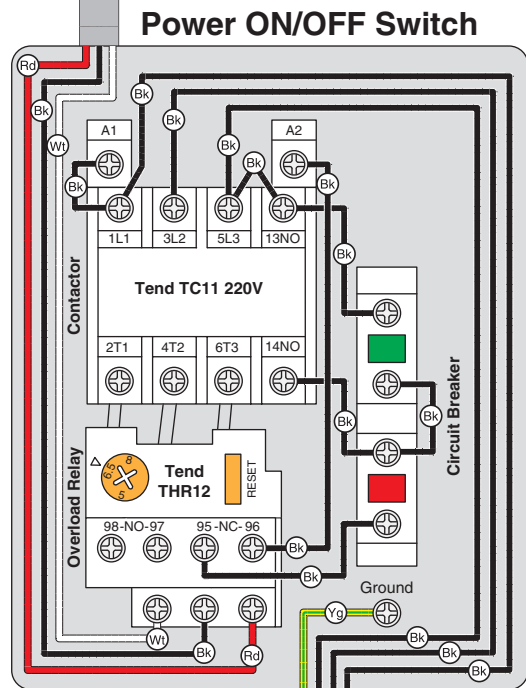
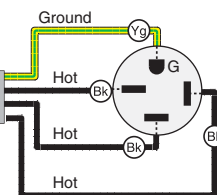
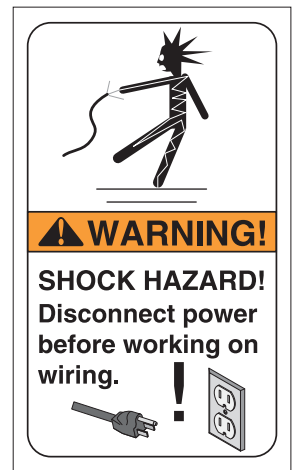


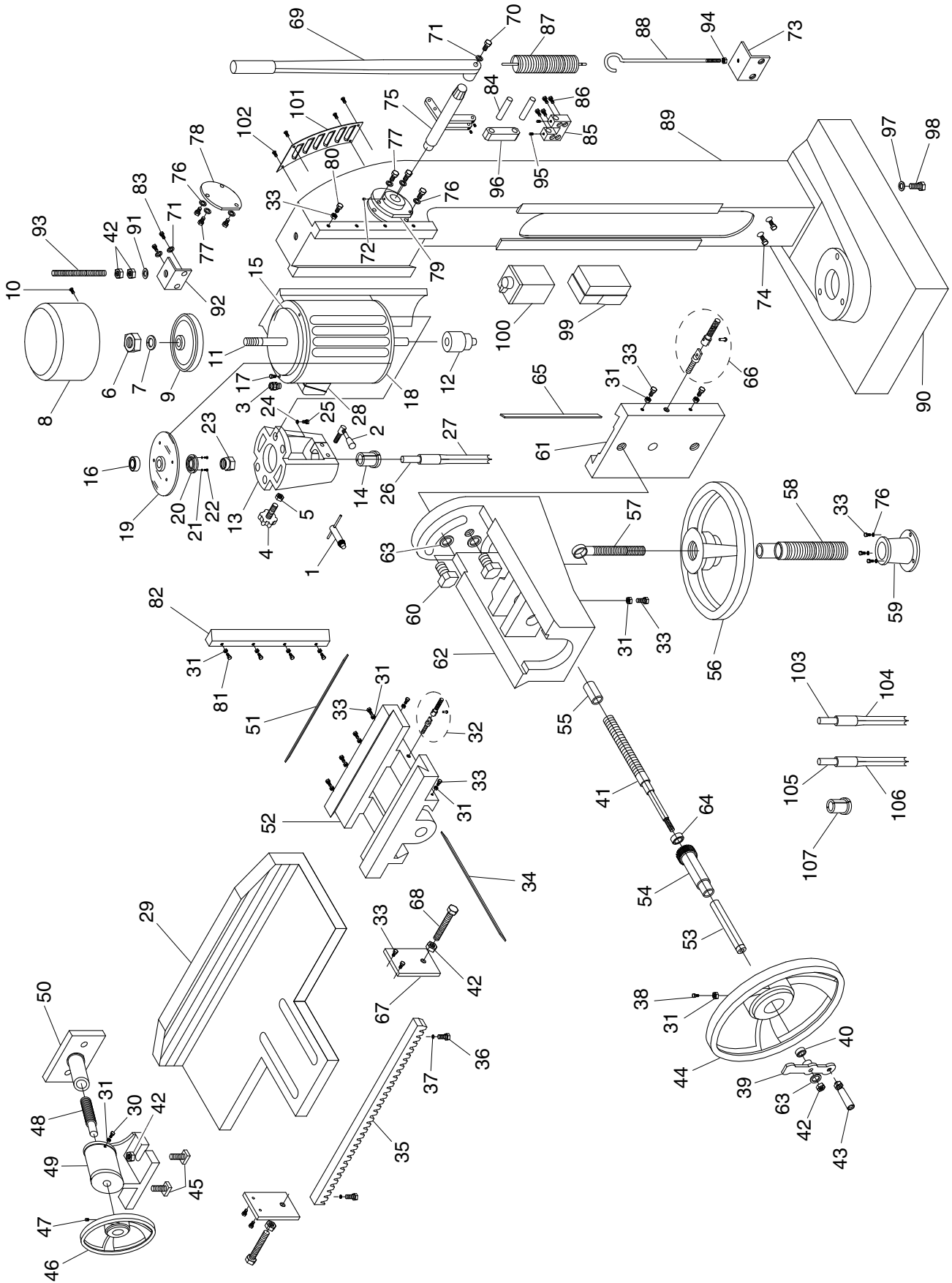
Figure 48. Power ON/OFF switch wiring.



220 VAC 3-Phase  
15-15 Plug  
(As Recommended)



# Parts Diagram





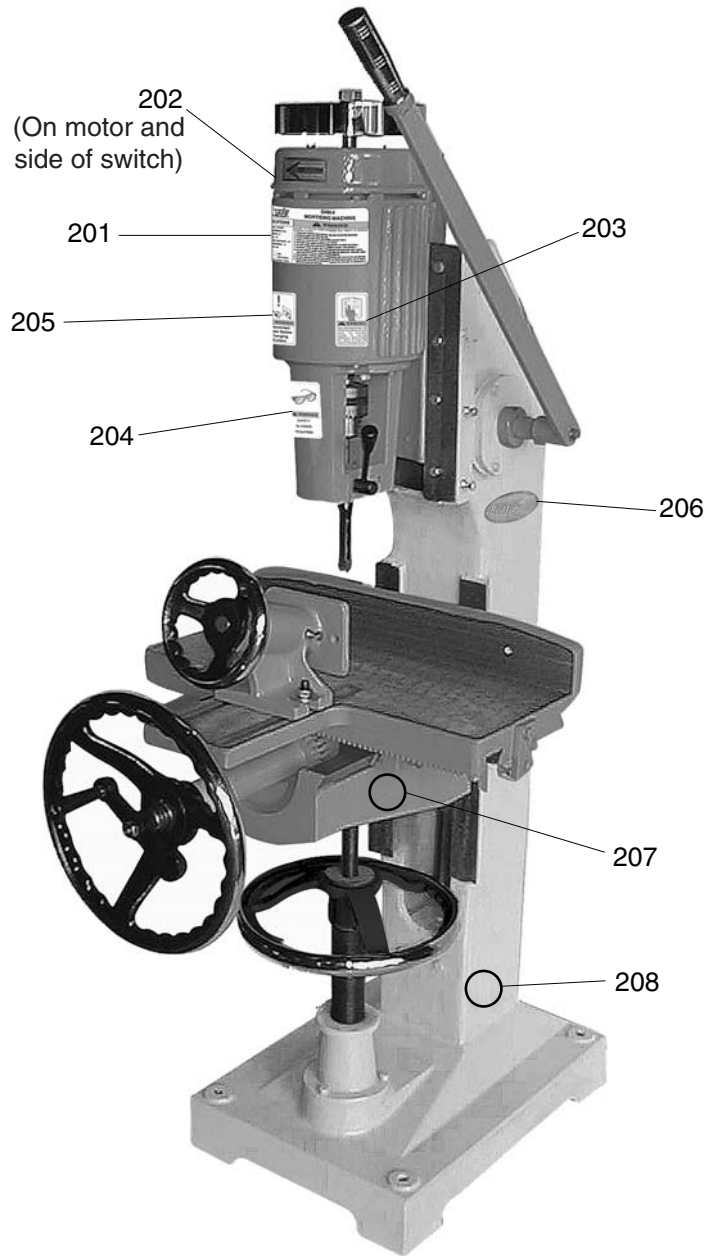
# Parts List

REF	PART #	DESCRIPTION
1	P4814001	CHUCK KEY
2	P4814002	CHISEL HOUSING LOCK LEVER
3	P4814003	STRAIN RELIEF
4	P4814004	CHISEL HOUSING LOCK KNOB
5	PN08	HEX NUT 3/8-16
6	P4814006	HEX NUT 5/8-11 LH
7	PLW06	LOCK WASHER 5/8
8	P4814008	MOTOR FAN COVER
9	P4814009	MOTOR FAN
10	PS07	PHLP HD SCR 1/4-20 X 3/8
11	P4814011	MOTOR SPINDLE
12	P4814012	BIT CHUCK JT6-1/2"
13	P4814013	CHISEL HOUSING
14	P4814014	CHISEL SLEEVE 3/4"
15	P4814015	MOTOR TOP COVER
16	P4814016	BALL BEARING 6204
17	PB31	HEX BOLT 1/4-20 X 1
18	P4814018	MOTOR 2HP 220V 3PH
19	P4814019	MOTOR BASE
20	P4814020	BEARING CAP
21	PLW02	LOCK WASHER 1/4
22	PB05	HEX BOLT 1/4-20 X 3/4
23	P4814023	BEARING RETAINER
24	PLW01	LOCK WASHER 5/16
25	PB03	HEX BOLT 5/16-18 X 1
26	P4814026	MORTISE AUGER BIT 1/2"
27	P4814027	MORTISE CHISEL 1/2"
28	P4814028	MOTOR WIRING JUNCTION BOX
29	P4814029	TABLE
30	PB03	HEX BOLT 5/16-18 X 1
31	PN02	HEX NUT 5/16-18
32	P4814032	CROSS SLIDE LOCK LEVER
33	PB11	HEX BOLT 5/16-18 X 1-1/2
34	P4814034	CROSS SLIDE GIB
35	P4814035	TABLE RACK
36	PB03	HEX BOLT 5/16-18 X 1
37	PLW01	LOCK WASHER 5/16
38	PSS18	SET SCREW 5/16-18 X 3/4
39	P4814039	FLAT BALL HANDLE
40	P2901	THRUST BEARING 2901
41	P4814041	CROSS LEADSCREW
42	PN06	HEX NUT 1/2-13
43	P4814043	HANDLE
44	P4814044	LONGITUDINAL HANDWHEEL
45	P4814045	T-BOLT 1/2-13
46	P4814046	WISE HANDWHEEL
47	PSS18	SET SCREW 5/16-18 X 3/4
48	P4814048	WISE LEADSCREW
49	P4814049	WISE HOUSING
50	P4814050	WISE CLAMP
51	P4814051	LONGITUDINAL GIB
52	P4814052	CROSS SLIDE
53	P4814053	LEADSCREW SLEEVE
54	P4814054	PINION SHAFT

REF	PART #	DESCRIPTION
55	P4814055	LEADSCREW NUT
56	P4814056	VERTICAL HANDWHEEL
57	P4814057	UPPER VERTICAL LEADSCREW
58	P4814058	LOWER VERTICAL LEADSCREW
59	P4814059	LOWER LEADSCREW BASE
60	PB78	HEX BOLT 1/2-13 X 1-1/4
61	P4814061	KNEE MOUNT
62	P4814062	KNEE
63	PLW07	LOCK WASHER 1/2
64	P2904	BALL BEARING 2904
65	P4814065	KNEE GIB
66	P4814066	KNEE LOCK LEVER
67	P4814067	LIMIT STOP BRACKET
68	P4814068	LIMIT STOP HEX BOLT
69	P4814069	OPERATING HANDLE
70	PB24	HEX BOLT 3/8-16 X 1-1/4
71	PLW04	LOCK WASHER 3/8
72	P4814072	BALL OILER
73	P4814073	SPRING TENSION BRACKET
74	PB18	HEX BOLT 3/8-16 X 1
75	P4814075	MOTOR PIVOT
76	PLW01	LOCK WASHER 5/16
77	PB03	HEX BOLT 5/16-18 X 1
78	P4814078	MOTOR PIVOT COVER
79	P4814079	MOTOR PIVOT BUSHING
80	PB11	HEX BOLT 5/16-18 X 1-1/2
81	PB12	HEX BOLT 5/16-18 X 1-1/4
82	P4814082	HEAD GIB
83	PB18	HEX BOLT 3/8-16 X 1
84	P4814084	PIN 1/2"
85	P4814085	MOTOR PIVOT BRACKET
86	PB16	HEX BOLT 3/8-16 X 1-1/2
87	P4814087	EXTENSION SPRING
88	P4814088	SPRING CONNECTOR
89	P4814089	COLUMN
90	P4814090	BASE
91	PW01	FLAT WASHER 1/2
92	P4814092	DEPTH STOP BRACKET
93	P4814093	DEPTH STOP BOLT
94	PN08	HEX NUT 3/8-16
95	PSS07	SET SCREW 1/4-20 X 1/2
96	P4814096	MOTOR PIVOT CONNECTOR
97	PLW07	LOCK WASHER 1/2
98	PB55	HEX BOLT 1/2-13 X 1-1/2
99	P4814099	POWER ON/OFF SWITCH ASSY
100	P4814100	SPEED SWITCH ASSY
101	P4814101	COLUMN COVER
102	PS04	PHLP HD SCR 1/4-20 X 1/2
103	P4814103	MORTISE AUGER BIT 1/4"
104	P4814104	MORTISE CHISEL 1/4"
105	P4814105	MORTISE AUGER BIT 3/8"
106	P4814106	MORTISE CHISEL 3/8"
107	P4814107	CHISEL SLEEVE 5/8"



# Label Placement



REF	PART #	DESCRIPTION
201	P4814201	MACHINE ID LABEL
202	PLABEL-14A	ELECTRICITY LABEL
203	PLABEL-12A	READ MANUAL LABEL VL
204	PLABEL-11A	SAFETY GLASSES LABEL VL

REF	PART #	DESCRIPTION
205	PLABEL-63	DISCONNECT LABEL 220V VL
206	G9987	GRIZZLY OVAL NAMEPLATE SM
207	PPAINT-1	GRIZZLY GREEN TOUCH UP PAINT
208	PPAINT-11	GRIZZLY PUTTY TOUCH UP PAINT

## WARNING

Safety labels warn about machine hazards and ways to prevent injury. The owner of this machine **MUST** maintain the original location and readability of the labels on the machine. If any label is removed or becomes unreadable, **REPLACE** that label before using the machine again. Contact Grizzly at (800) 523-4777 or [www.grizzly.com](http://www.grizzly.com) to order new labels.







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| <input type="checkbox"/> Hand Loader            | <input type="checkbox"/> Popular Woodworking | <input type="checkbox"/> Wooden Boat          |
| <input type="checkbox"/> Handy                  | <input type="checkbox"/> Practical Homeowner | <input type="checkbox"/> Woodshop News        |
| <input type="checkbox"/> Home Shop Machinist    | <input type="checkbox"/> Precision Shooter   | <input type="checkbox"/> Woodsmith            |
| <input type="checkbox"/> Journal of Light Cont. | <input type="checkbox"/> Projects in Metal   | <input type="checkbox"/> Woodwork             |
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- \$30,000-\$39,000
- \$40,000-\$49,000
- \$50,000-\$59,000
- \$60,000-\$69,000
- \$70,000+

4. What is your age group?

- 20-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70+

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- 2-8 Years
- 8-20 Years
- 20+ Years

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- 3-5
- 6-9
- 10+

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We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

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